IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

This PHOTOFACT Folder Set is

WIRE-SEALED FOR YOUR PROTECTION

to guarantee completeness of contents

DO NOT ACCEPT IF SEAL HAS BEEN BROKEN

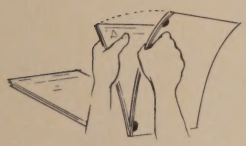
TO OPEN ***JUST DO THIS:***

1

Take hold of the Set with both hands. Place your thumbs directly under the top wire-seal; then, divide the contents equally by putting your thumbs midway through the thickness of the Set. Now, pull the two sections apart at the top, firmly.

2

Repeat this process, pulling close to the wire-seal at the bottom, so that the set is now divided into two equal parts.



3

Continue this "pulling-apart" process with the section in which the wire-seals remain, dividing it in half.

4

Finally, remove the wire-seals left in the last section; this can easily be done with your fingernail or any sharp instrument.

Your "Safety-Sealed" PHOTOFACT Set is now ready for profit-making use . . .

IMPORTANT

Before you remove the Wire-Seal, check the contents of this envelope with the listing on the front of the envelope. If any part is missing, your Howard W. Sams distributor will replace the entire PHOTOFACT set IF the Wire-Seal has not been damaged.

The PHOTOFACT® Servicer

SET 521 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ MARCH 1961

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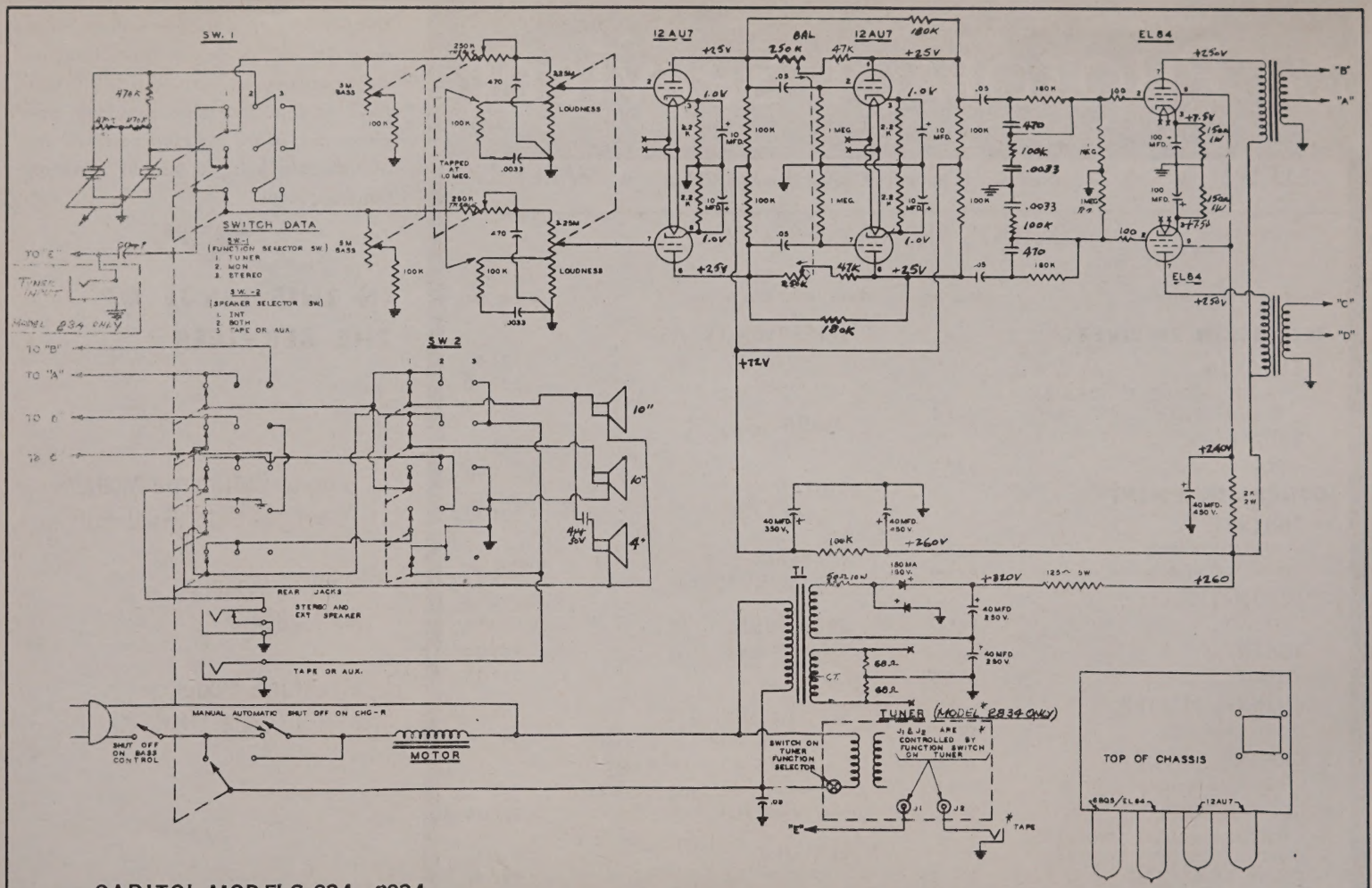
This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

IN THIS ISSUE OF THE SERVICER:

Bigg of California Model "George, Gott" GDP-50P

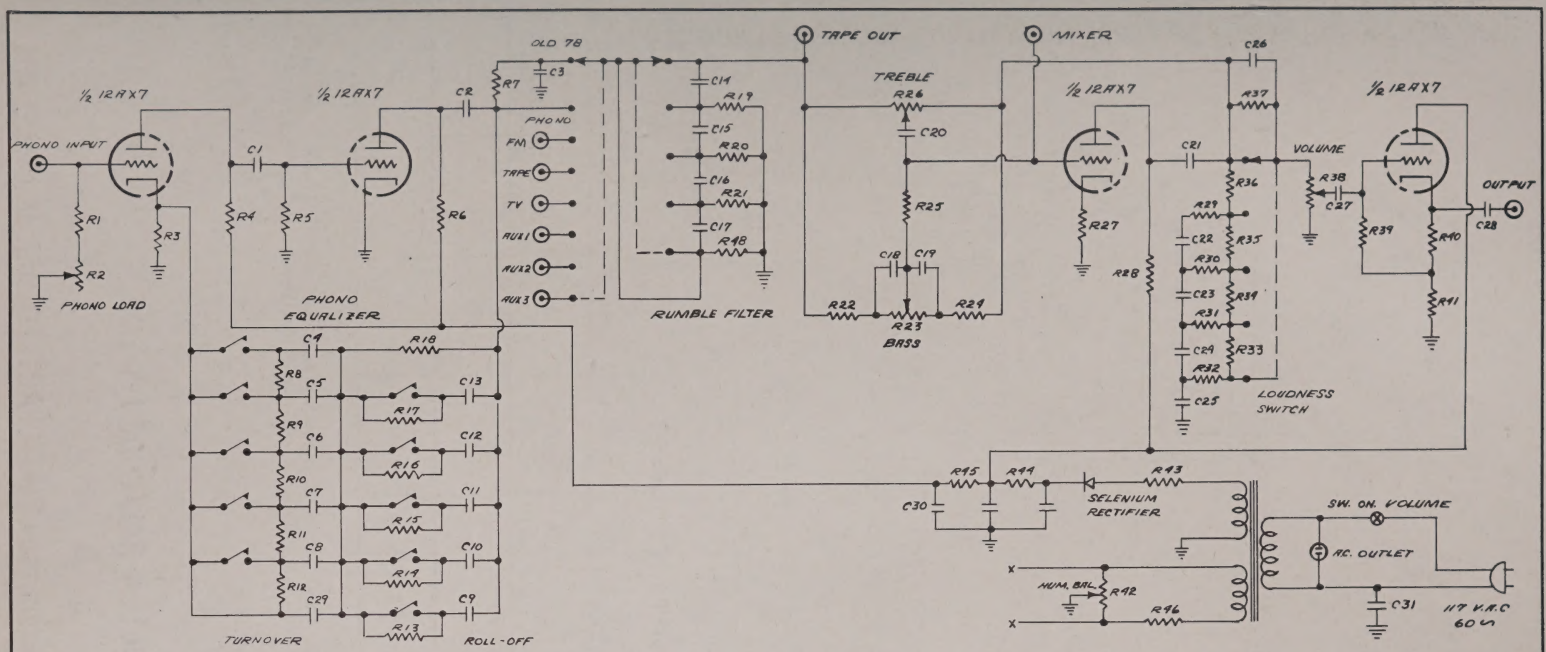
Capitol Models 834, 2834

Firestone Model 4-H-1 (Code 1-8-27X)



CAPITOL MODELS 834, 2834

Schematic Diagram Courtesy of Capitol Records, Inc.



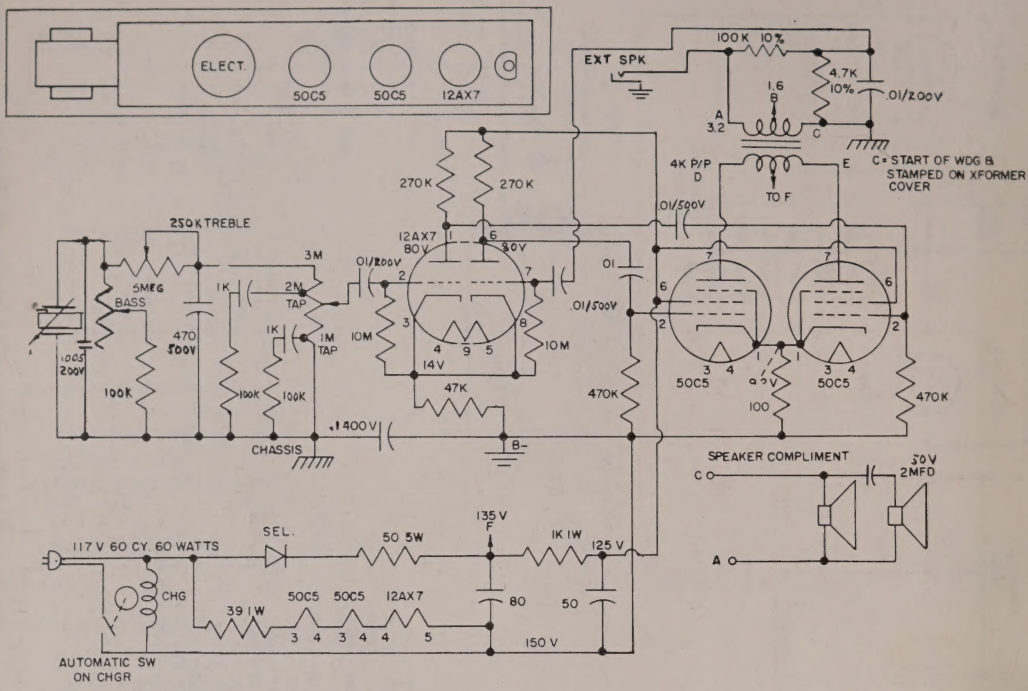
R1 – 1800 – 1W
R2 – 100K LORD
R3 – 680 – 1W
R4 – 270K – 1W
R5 – 3.9M – 1W
R6 – 100K – 1W
R7 – 100K – ½W
R8 – 20M – ½W
R9 – 20M – ½W
R10 – 20M – ½W
R11 – 20M – ½W
R12 – 20M – ½W
R13 – 20M – ½W
R14 – 20M – ½W
R15 – 20M – ½W
R16 – 20M – ½W
R17 – 20M – ½W
R18 – 100K – 1W
R19 – 1M – ½W
R20 – 470K – ½W
R21 – 220K – ½W
R22 – 100K – ½W
R23 – 1M – BASS
R24 – 100K – ½W
R25 – 470K – ½W
R26 – 1M – TREBLE
R27 – 1800 – 1W
R28 – 100K – 1W
R29 – 220K – ½W
R30 – 68K – ½W
R31 – 33K – ½W
R32 – 15K – ½W
R33 – 20M – ½W
R34 – 20M – ½W
R35 – 20M – ½W
R36 – 20M – ½W
R37 – 330K – ½W
R38 – 1M – VOLUME
R39 – 1M – 1W
R40 – 1800 – 1W
R41 – 100K – 1W
R42 – 100K – HUM
R43 – 47 – 1W
R44 – 33K – 1W
R45 – 22K – 1W
R46 – 4.7 – 1W
R47 – 1M – MIXER
R48 – 20M – ½W

C1 – .02
C2 – .05
C3 – .002
C4 – 330
C5 – 470
C6 – 750
C7 – .001
C8 – .0015
C9 – .0015
C10 – 750
C11 – 470
C12 – 330
C13 – 220
C14 – .02
C15 – .02
C16 – .02
C17 – .02
C18 – .004
C19 – .004
C20 – 100
C21 – .02
C22 – .005
C23 – .01
C24 – .02
C25 – .02
C26 – 330
C27 – .02
C28 – .1
C29 – .0015
C30 – FILTER – 3 x 20
C31 – .02

BINAURAL
IN
R49
OUT
MIXER

BIGG OF CALIFORNIA MODEL "GEORGE GOTT" GDP-50P

Schematic Diagram Courtesy of Bigg of California



RESISTANCE CHART

	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9
V1	270K*	10M	47K	12	0	270K*	10M	47K	7
V2	100	470K	65	12	NC	1K*	2K*	—	—
V3	100	470K	77	65	NC	1K*	2K*	—	—

Measurements taken with VTVM BETWEEN B— and Socket pins, except for Readings marked with * asterisk, which were taken between B+ source (junction of + lug of Selen. Rectifier and 50 Ohm Resistor) and Socket pin. NC = No connection.

Readings may vary plus or minus 20%.

FIRESTONE MODEL 4-H-1 (CODE 1-8-27X)

For information on the record changer see PHOTOFACT FOLDER 18 IN SET 436

Schematic Diagram Courtesy of Firestone Tire & Rubber Company

PHOTOFACT® Folder with CIRCUITRACE®

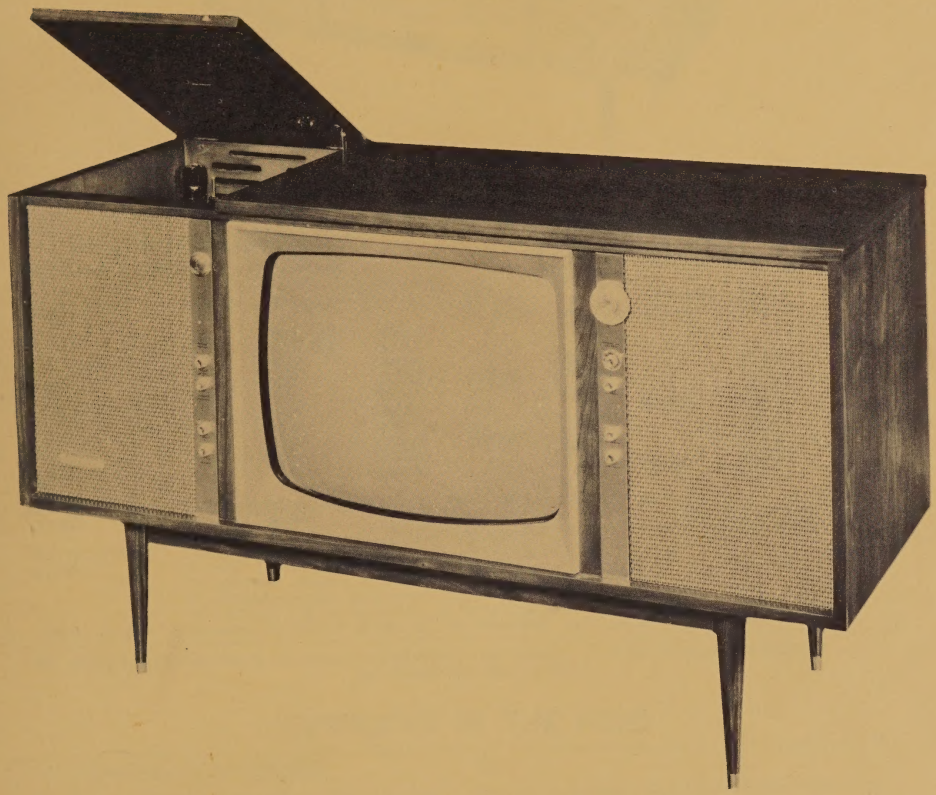
EMERSON CHASSIS 120515C, 516D, 533B, 534B, 535B, 536B, 541C, 542D

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

EMERSON CHASSIS 120515C, 516D, 533B, 534B, 535B, 536B, 541C, 542D



EMERSON CHASSIS 120515C, 516D, 533B, 534B, 535B, 536B, 541C, 542D

MODEL 1534 (TV CH. 120541C, FM-AM TUNER 120533B, AMP. CH. 120536B)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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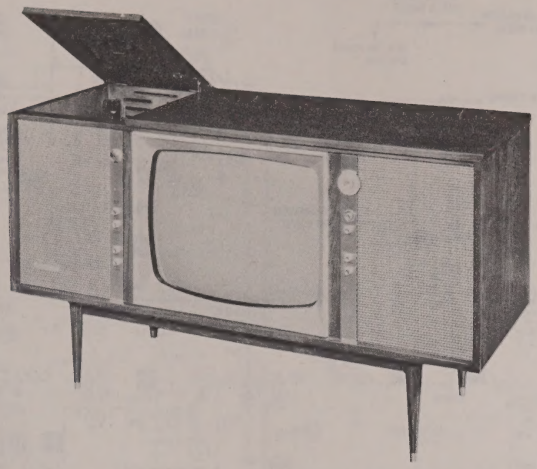
SET 521 FOLDER 1

PHOTOFACT® Folder with CIRCUITRACE®

EMERSON CHASSIS 120515C, 516D, 533B, 534B, 535B, 536B, 541C, 542D

EMERSON CHASSIS 120515C, 516D, 533B, 534B, 535B, 536B, 541C, 542D



MODEL 1534 (TV CH. 120541C,
FM-AM TUNER 120533B, AMP. CH. 120536B)

CAUTION

Care should be exercised when connecting test equipment or physically contacting chassis.

TRADE NAME	EMERSON MODELS	TV Ch.	FM-AM Tuner Ch.	Amp. Ch.	AM Tuner & Amp. Ch.	Record Changer
	1528, 1530	120515C				
	1529, 1531	120516D				
	1532	120541C		120535B		819159
	1534	120541C	120533B	120536B		819159
	1536	120541C		120535B		819159
	1538	120541C			120534B	819159
	1533	120542D		120535B		819159
	1535	120542D	120533B	120536B		819159
	1537	120542D		120535B		819159
	1539	120542D			120534B	819159

MANUFACTURER	Emerson Radio & Phonograph Corp., 524 W. 23rd St., New York 11, N. Y.
TUBES	TV: VHF - Sixteen FM-AM Tuner 120533B: Five Amp. 120535B: Three UHF - Seventeen AM Tuner & Amp. 120534B: Five Amp. 120536B: Three
POWER SUPPLY RATING	110-120 Volts AC, 60 Cycle TV Only: 115 Watts, 1.15 Amp. @ 117 Volts AC FM-AM Radio w/Amp. & TV: 173 Watts, 1.72 Amp. @ 117 Volts AC FM-AM Radio w/Amp. (in Stereo or FM Pos.): 58 Watts, .57 Amp. @ 117 Volts AC FM-AM Radio w/Amp. (in AM Pos. or Phono Less Motor): 51 Watts, .5 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

FOR SERVICE INFORMATION ON RECORD CHANGER #819159 - SEE SIMILAR COLLARO CONQUEST (REVISED) - PHOTOFACT SET 408 FOLDER 6.

SERVICING IN THE FIELD

VHF TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, remove Channel Selector and Fine Tuning Knobs.

SAFETY GLASS REMOVAL

The safety glass is an integral part of the picture tube (23" Models).

FUSE AND FUSE DEVICE

The TV Chassis is protected by a 1 1/4 Amp. fuse (LV Supply) and a 1Ω fusible resistor (filament protection).

The FM-AM Tuner, AM Tuner, and Amp. Chassis are protected by a 22Ω fusible resistor (LV Supply).

AGC

The AGC is adjusted by Local-Fringe-Normal Switches on VHF Tuner terminal bracket.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Frequency Slug (B1).

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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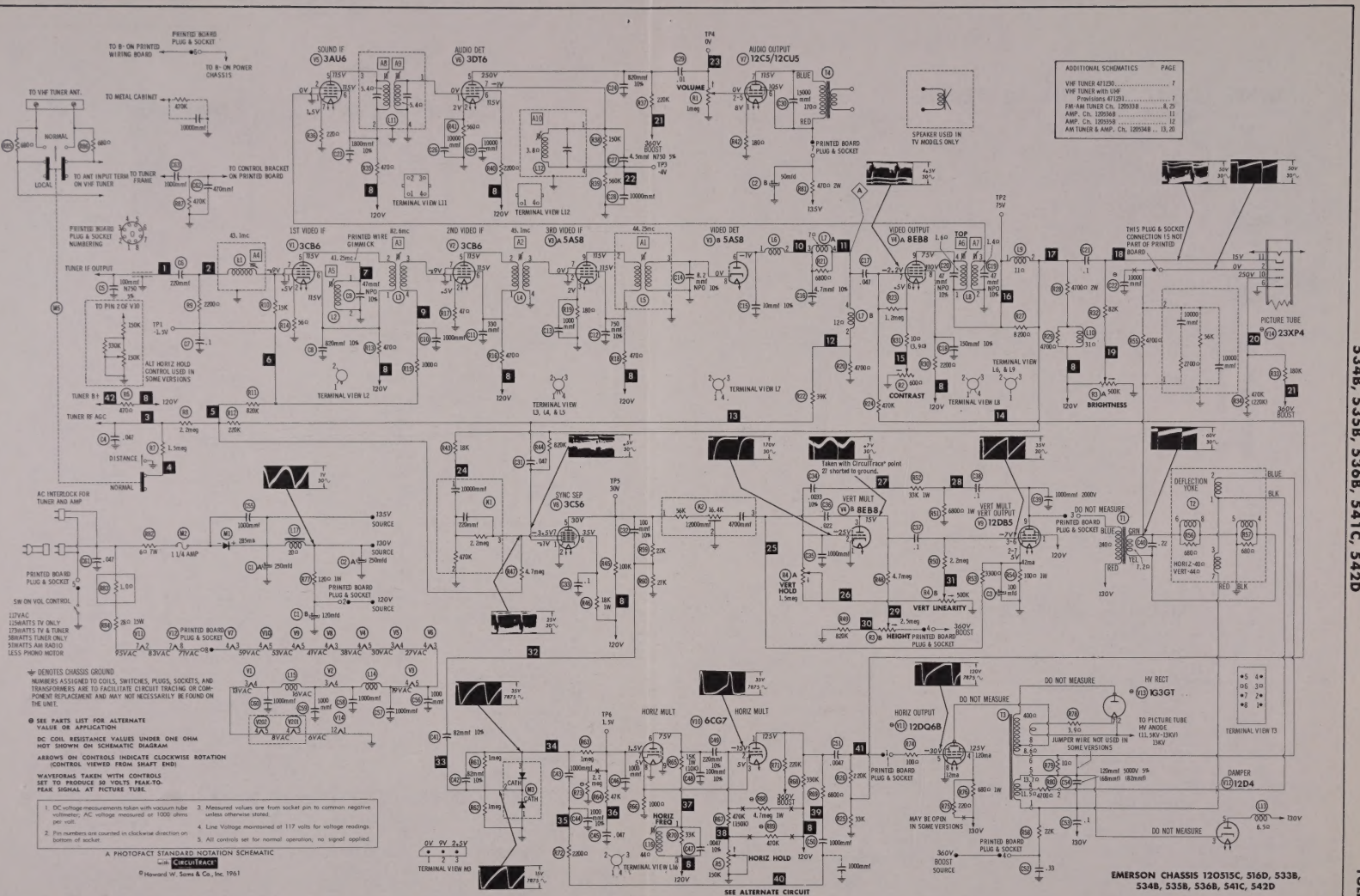
KC497

SET 521 FOLDER 1


EMERSON CHASSIS 120515C, 516D, 533B, 534B, 535B, 536B, 541C, 542D
SEE ALTERNATE CIRCUIT
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
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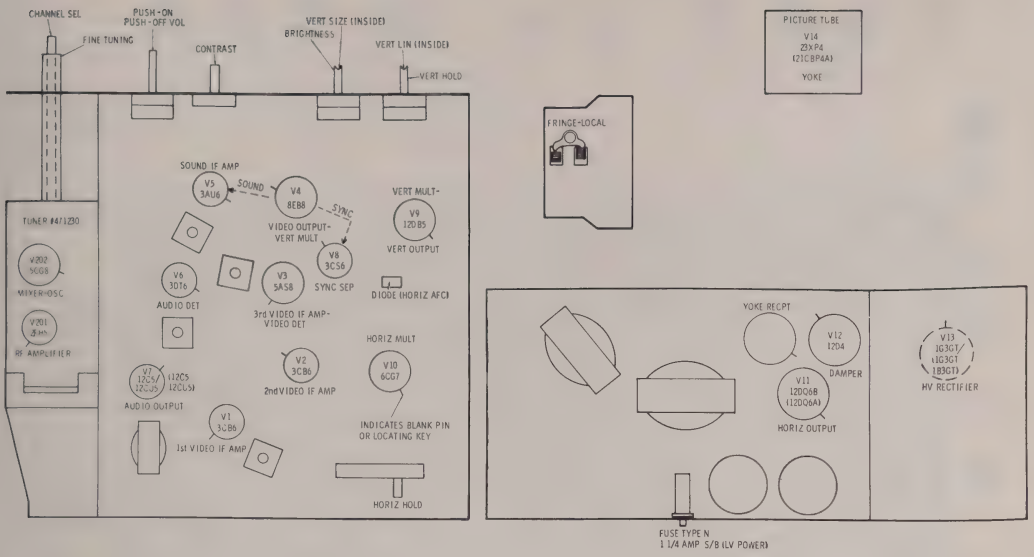
TV TUBE PLACEMENT CHART



TOP VIEW

TV TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

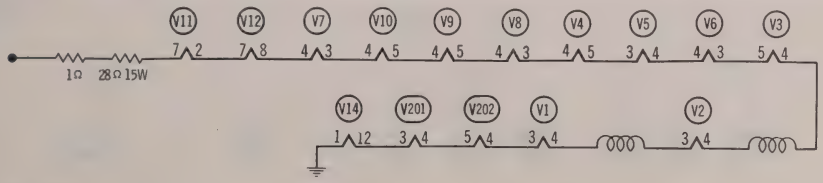
POWER SUPPLY FAILURE
No raster, no sound Fuse (LV Power), Rectifier (B+), Fusible Res. (Fil.)

SWEEP FAILURE
No raster, has sound V10, V11, V12, V13, V14
No vertical deflection V4, V9
Poor vert. linearity or foldover V4, V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, Rectifier (B+)
Vert. off freq. V4, V9
Horiz. off freq. Diodes (Horiz. AFC), V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V14
Has pic, no sound V5, V6, V7

SYNC FAILURE
No vert. sync V8
No horiz. sync V8
No vert. or horiz. sync V8, Diodes (Horiz. AFC)

This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



SET 521 FOLDER 1

EMERSON CHASSIS 120515C, 516D, 533B, 534B, 535B, 536B, 541C, 542D

FOLDER 1

A Howard W. Sams CIRCUITRACE® Photo

TV PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

TV ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication.
Connect the negative lead of a 3 volt bias supply to point TP-1. Positive to chassis.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Place a thin insulated metal strip between the Mixer-Osc. tube and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	Not used	44.25MC (Unmod.)	Any non-interfering channel	Use VTVM DC probe thru 10K to point (A). Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	45.1MC	"	"	A2	"
3.	"	"	42.6MC	"	"	A3	"
4.	"	"	43.1MC	"	"	A4	"
5.	"	"	41.25MC	"	"	A5	Adjust for MINIMUM deflection.
6.	"	44.0MC (10MC Swp.)	45.75MC	"	Vert. Amp. thru 20K to point (A). Low side to chassis.	Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.

4.5MC TRAP ALIGNMENT

Tune in a strong TV signal and set Contrast at maximum. Adjust the Fine Tuning until a beat pattern is visible. Adjust A6 for MINIMUM beat interference.

SOUND IF ALIGNMENT

Tune in a strong TV signal and adjust A7, A8 and A9 for loudest sound. Adjust A10 for clearest and loudest sound. If two peaks occur, peak with slug nearest chassis.
Disconnect antenna lead and loosely couple to obtain a weak signal and repeat adjustment of A7, A8 and A9 tuning for maximum sound and MINIMUM distortion.
Check the voltage at TP-3 using a VTVM. It should measure between -4 and -9 volts and should not vary more than two volts between a strong signal and a weak one.
Check sound on all available channels and repeat entire procedure, if necessary.

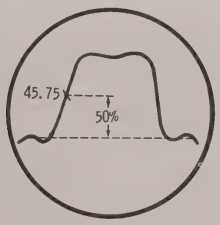
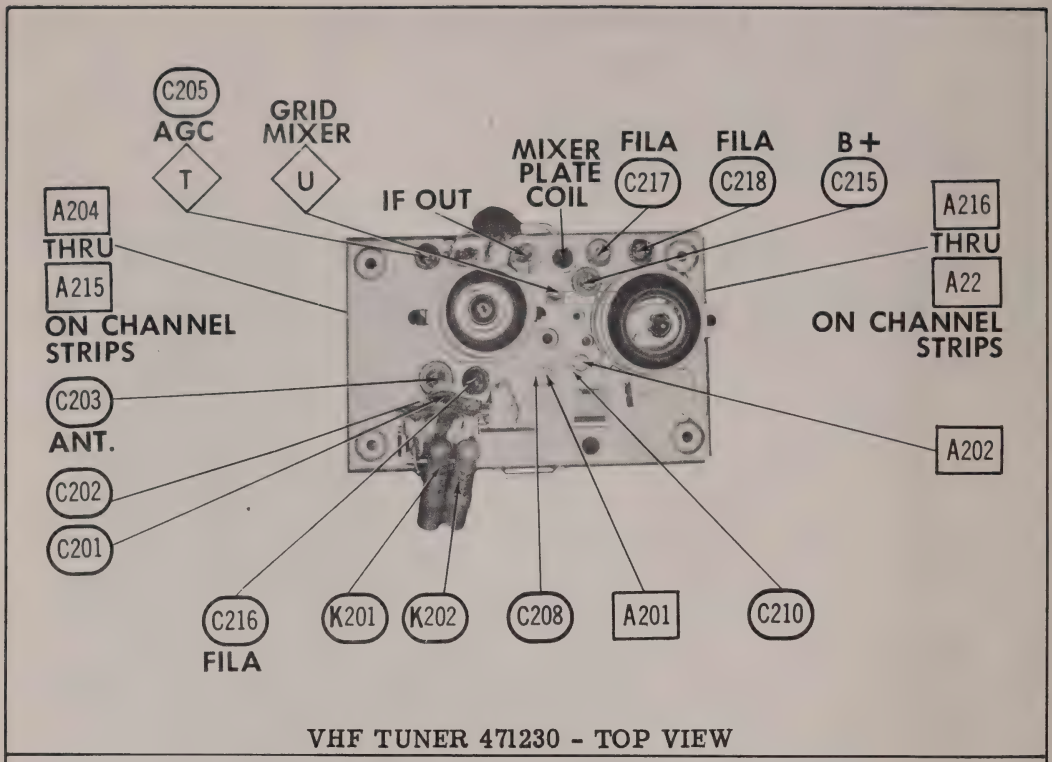
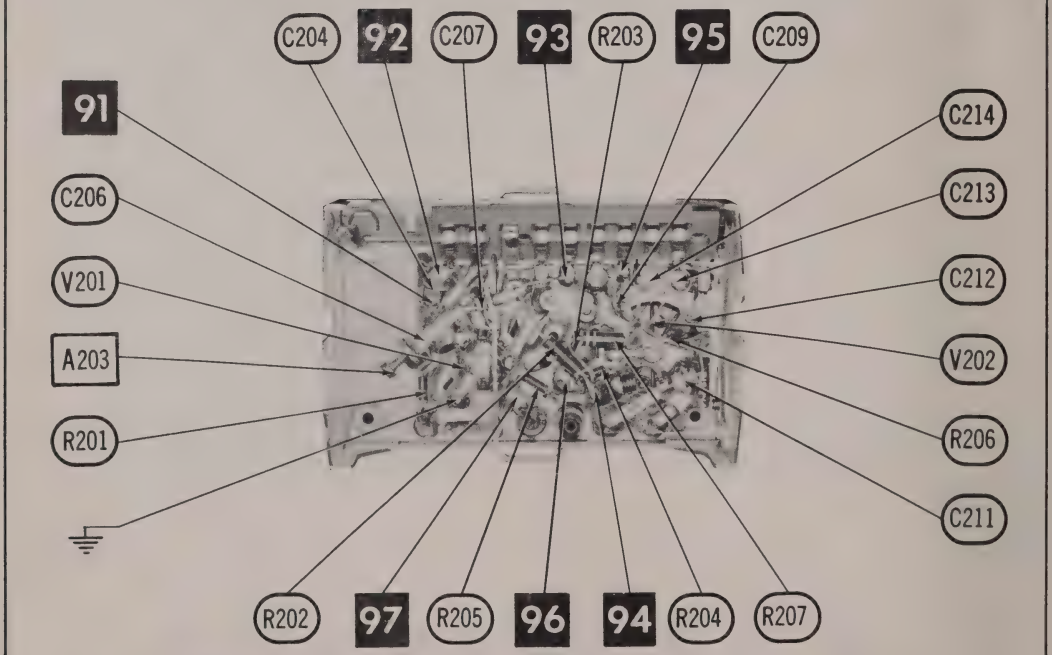


FIG.1



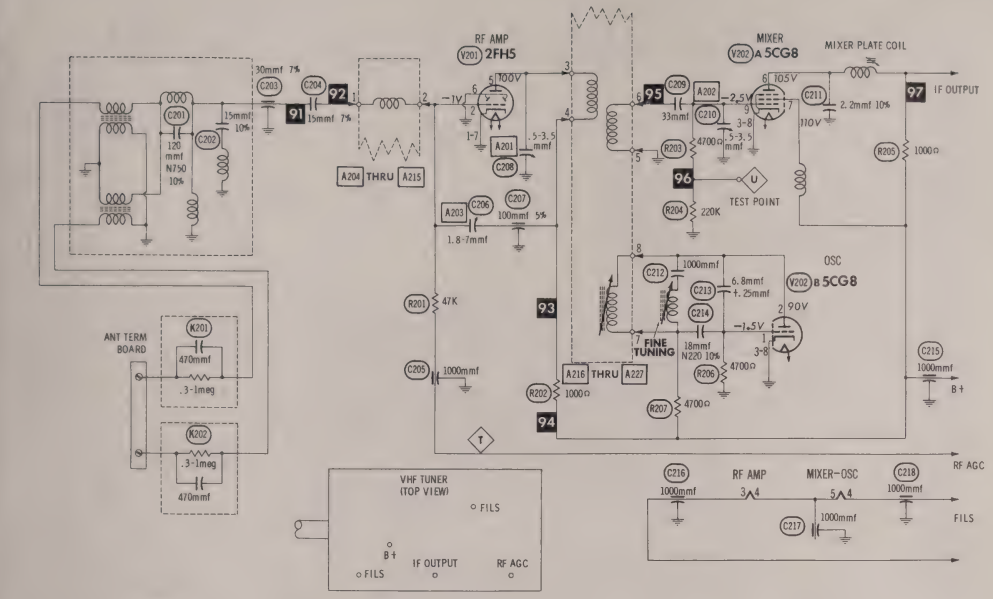
VHF TUNER 471230 - TOP VIEW



A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

VHF TUNER 471230 - BOTTOM VIEW



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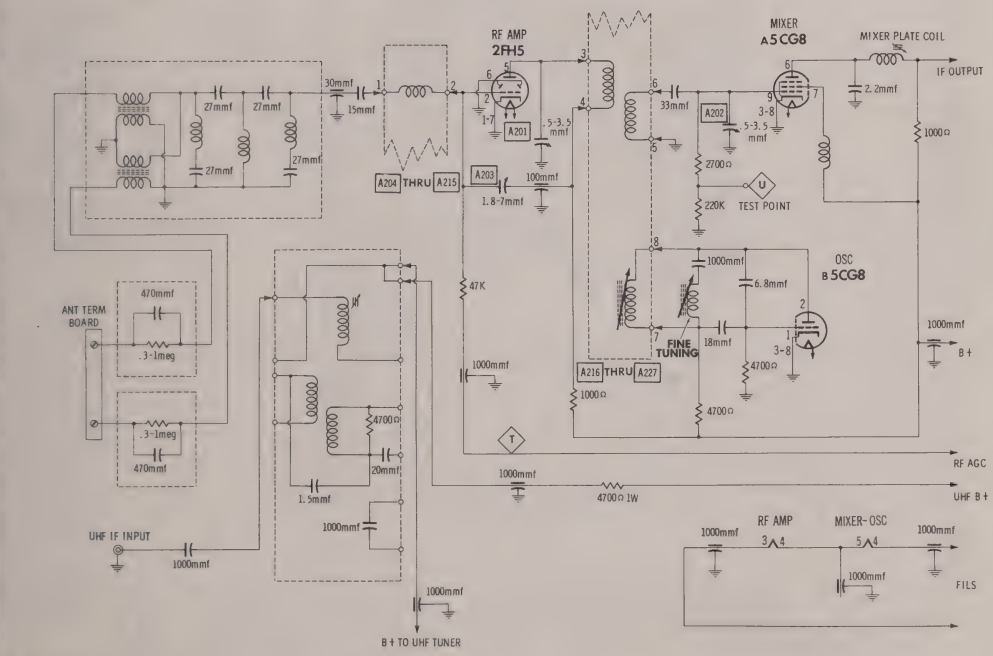
VHF TUNER 471230



A PHOTOFACT STANDARD NOTATION SCHEMATIC
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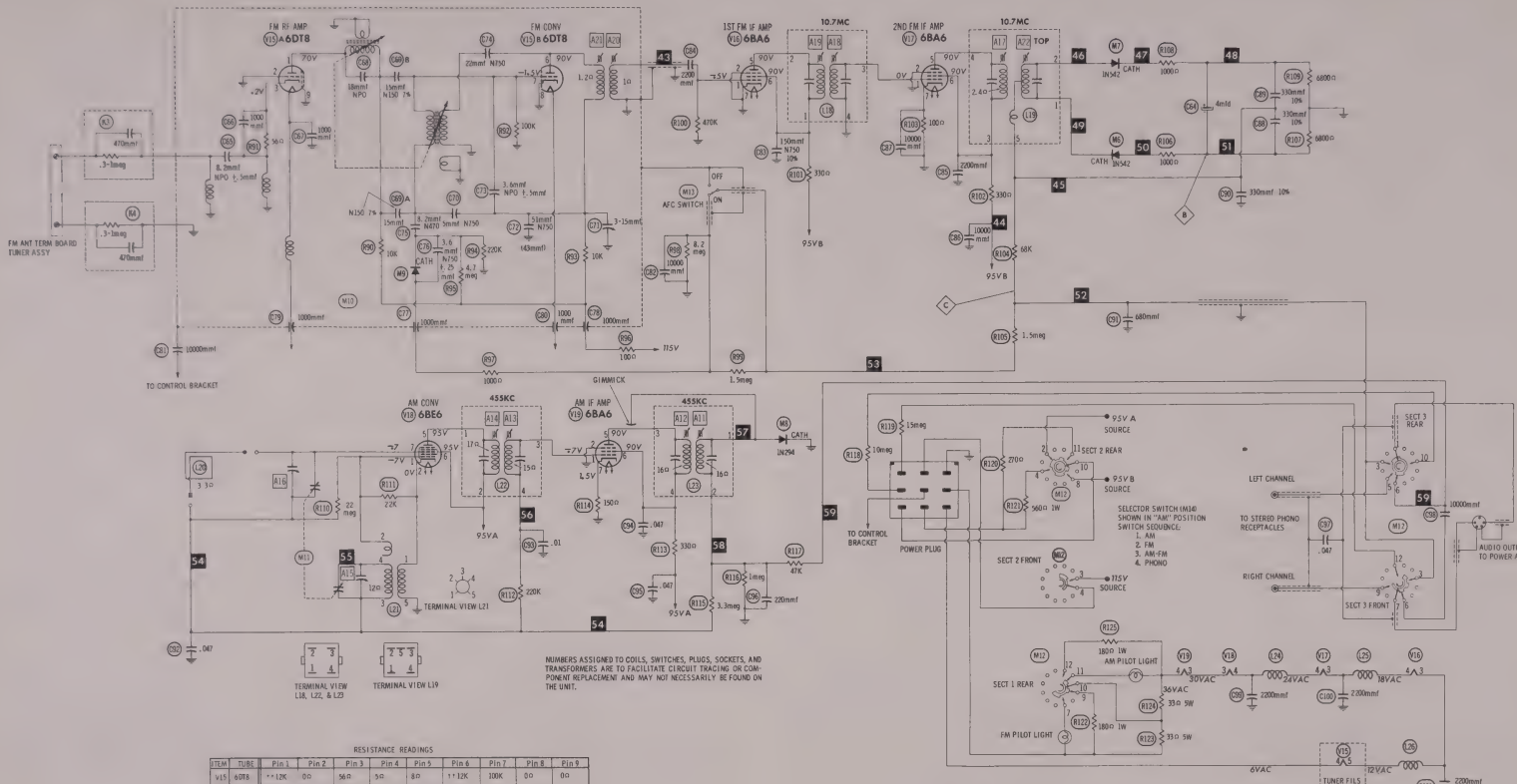
VHF TUNER with UHF Provisions - 471231



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V15	6DT8	††12K	0Ω	56Ω	5Ω	8Ω	††12K	100K	0Ω	0Ω
V16	6BA6	470K	0Ω	8Ω	11Ω	††600Ω	††600Ω	0Ω		
V17	6BA6	5Ω	0Ω	11Ω	14Ω	††600Ω	††600Ω	100Ω		
V18	6BE6	22K	.5Ω	17Ω	14Ω	††300Ω	††300Ω	3.3meg		
V19	6BA6	3.5meg	0Ω	17Ω	20Ω	††600Ω	††600Ω	150Ω		

ALL FM-AM TUNER AND AMP MEASUREMENTS MADE IN "AM-FM STEREO" POSITION.
†† MEASURED FROM OUTPUT OF M14.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
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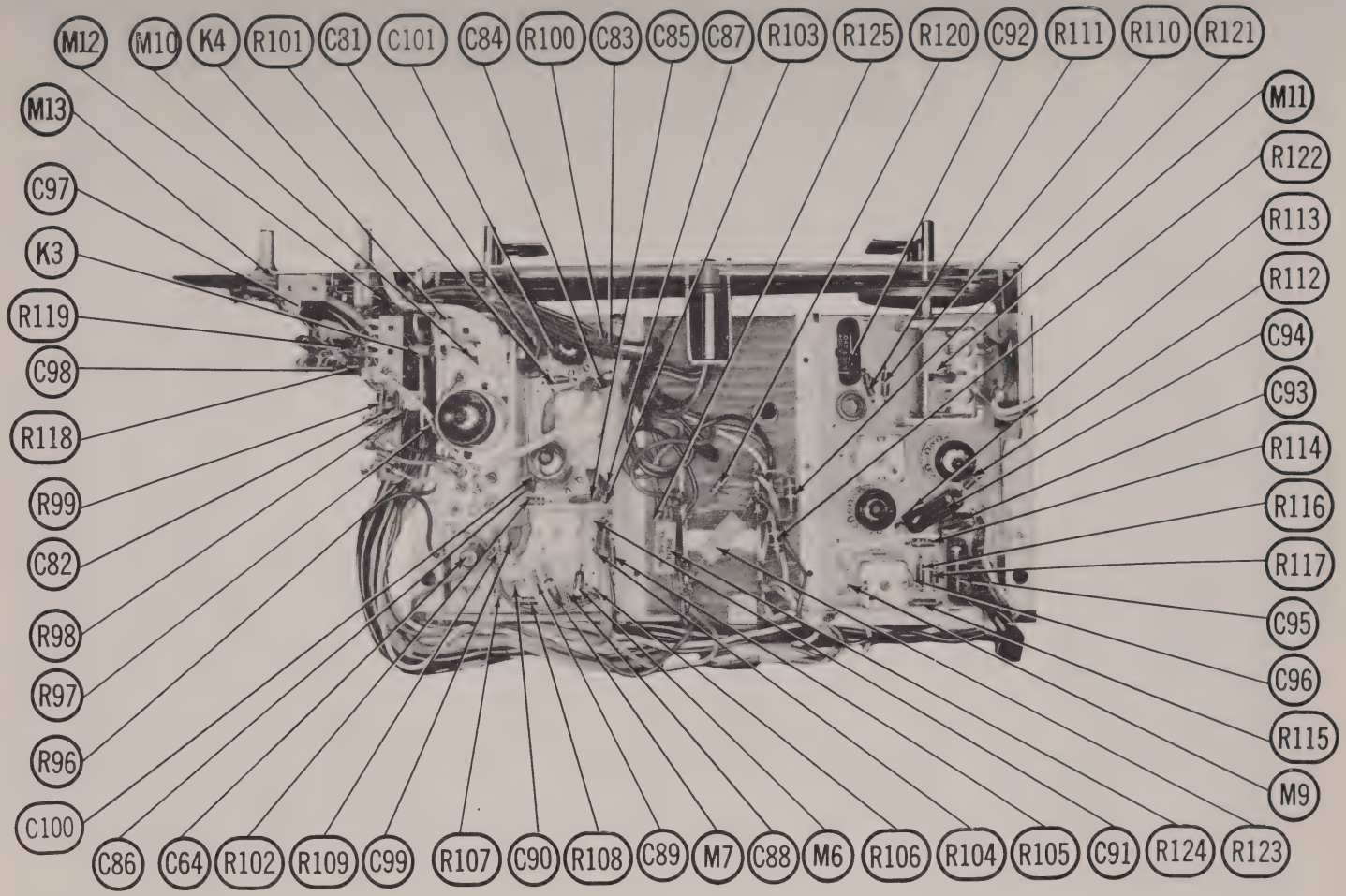
FM-AM TUNER 120533B



FM-AM TUNER 120533B TOP VIEW - CAPACITOR, RESISTOR, MISC. IDENT.

EMERSON CHASSIS 120515C, 516D, 533B, 534B, 535B, 536B, 541C, 542D

ALIGNMENT INSTRUCTIONS

FM-AM TUNER 120533B

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A11, A12, A13, A14, A17, A22 ...	GENERAL CEMENT #5097, 8727 WALSCO #2515
A15, A16	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A18, A19	GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 WALSCO #2526, 2543, 2544, 2545
A20, A21	GENERAL CEMENT #9296, 9297 WALSCO #2546, 2547

AM ALIGNMENT - SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .005mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open	Across voice coil	A11, A12, A13, A14	Adjust for maximum output.
2.	Loop	1638KC	"	"	A15	Adjust for maximum output.
3.	"	1425KC	Tune to 1425KC Signal	"	A16	Adjust for maximum output. Repeat Steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM - SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	Across FM antenna terminals.	10.7MC (Unmod.)	(FM) Point of non-interference	DC probe to point Ⓑ. Common to chassis.	A17, A18, A19, A20, A21	Adjust for maximum deflection.
5.	"	"	"	DC probe to point Ⓒ. Common to chassis.	A22	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE - SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	Across FM antenna terminals.	10.7MC (450KC Swp.)	(FM) Point of non-interference	Vert. Amp. to point Ⓑ. Low side to chassis.	A17, A18, A19, A20, A21	Disconnect Stabilizing Capacitor C64. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C64.
5.	"	"	"	Vert. Amp. to point Ⓒ. Low side to chassis.	A22	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A17 for maximum amplitude and straightness of crossover lines.

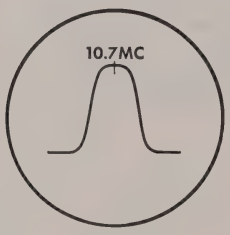


FIG. 1

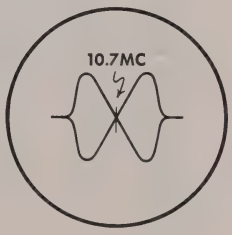
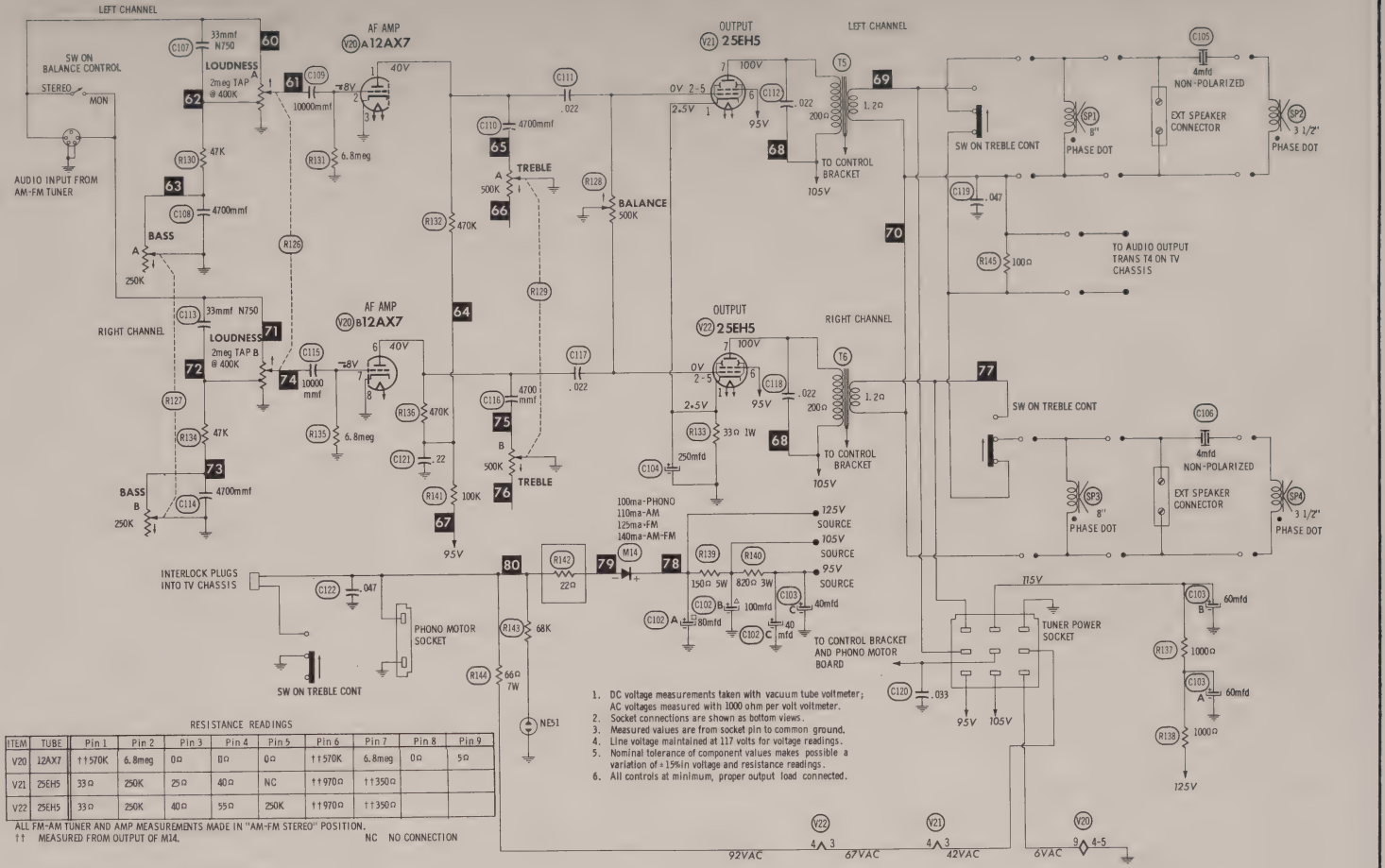


FIG. 2



ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V20	12AX7	††570K	6.8meg	0Ω	▯Ω	0Ω	††570K	6.8meg	0Ω	5Ω
V21	25EH5	33Ω	250K	25Ω	40Ω	NC	††970Ω	††350Ω		
V22	25EH5	33Ω	250K	40Ω	55Ω	250K	††970Ω	††350Ω		

RESISTANCE READINGS

ALL FM-AM TUNER AND AMP MEASUREMENTS MADE IN "AM-FM STEREO" POSITION.
†† MEASURED FROM OUTPUT OF M14. NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15%in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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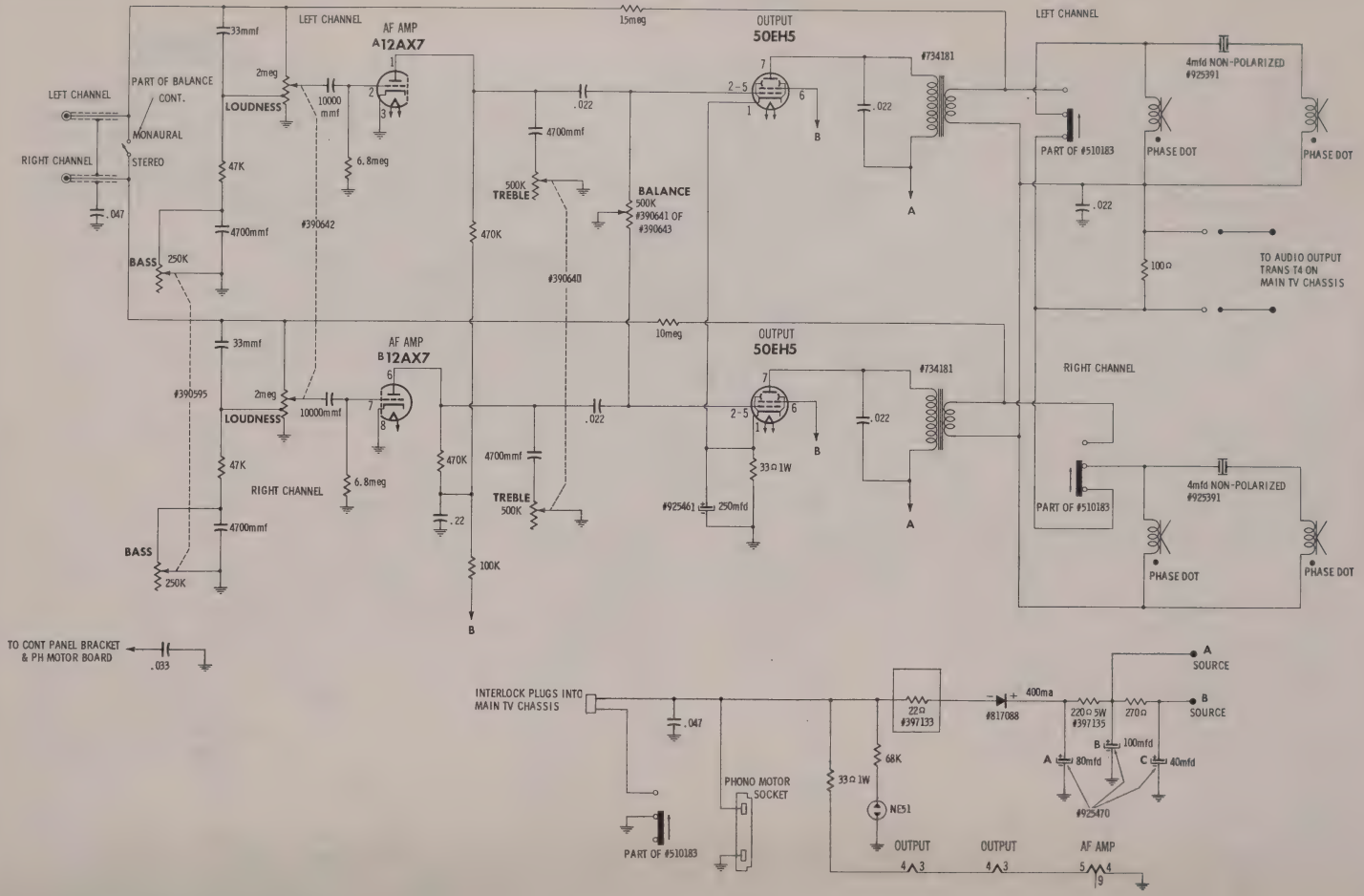
AMP. CH. 120536B

EMERSON CHASSIS 120515C, 516D, 533B, 534B, 535B, 536B, 541C, 542D



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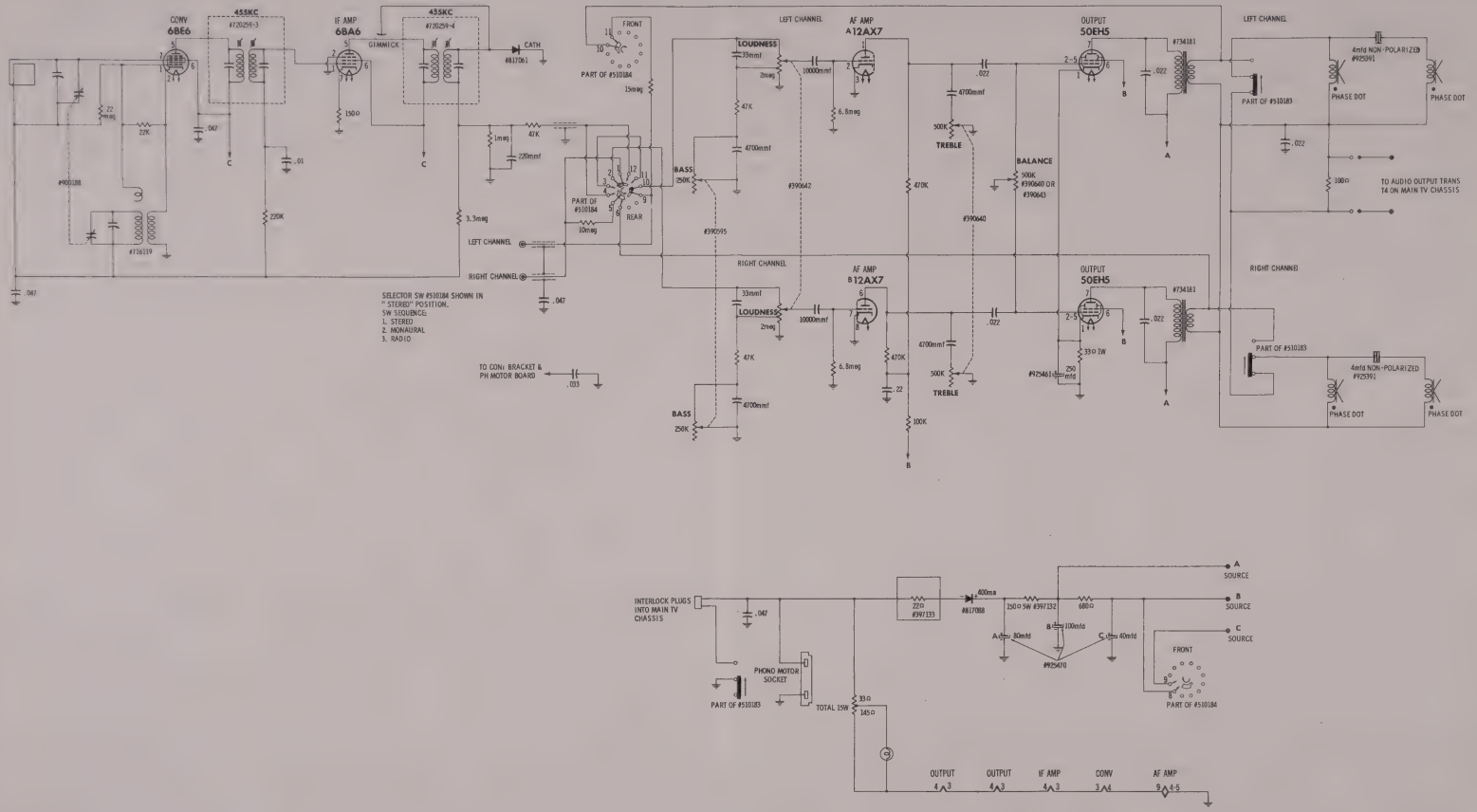
AMP. CH. 120535B



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AM TUNER & AMP. CH. 120534B

TV PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V1	1st Video IF Amp.	3CB6
V2	2nd Video IF Amp.	3CB6
V3	3rd Video IF Amp. - Video Det.	5AS8
V4	Video Output - Vert. Mult.	8EB8
V5	Sound IF Amp.	3AU6
V6	Audio Det.	3DT6
V7	Audio Output	12C5/12CU5 (12C5, 12CU5) *
V8	Sync Sep.	3CS6
V9	Vert. Mult. - Vert. Output	12DB5
V10	Horiz. Mult.	6CG7
V11	Horiz. Output	12DQ6B (12DQ6A) *
V12	Damper	12D4
V13	HV Rectifier	1G3GT (1G3GT/1B3GT) *

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	EMERSON PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V14	23XP4 21CBP4A	21CBP4A ①	23XP4 ① 21CBP4A ①	21CBP4/21CBP4A①	23XP4 ② 21CBP4/21CBP4A②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	250	160	925500	PR3-043		WT312		TVAS-3437.6 *	
B	120	160							
C2A	250	150	925499	PR2-120	XC0126	WD251	CDBT-1009	TVAS-2473 *	
B	50	150							
C3	100	50	925442	PRS1360	BR1005	TC3501	TD-100-50	TVA-1310	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C5	100 N750 5%			DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C6	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C7	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C8	820 10%		DI-820	DD-821	5R5T82	CCD-821	GP382	10TS-T82
C9	47 NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C10	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C11	330		DI-330	DD-331	L10T33	CCD-331	B-333	10TS-T33
C12	750 10%		DI-750	DD-751	5R5T75	CCD-751	GP375	10TS-T75
C13	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C14	8.2 NPO 10%		NPO-DI 8.2		C10V82C			10TCC-V82
C15	10 10%		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C16	4.7 10%		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C17	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C18	150 10%		DI-150	DD-151	L10T15	CCD-151	GP315	10TS-T15
C19	47 NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C20	47 NPO 10%		NPO-DI 47	DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C21	.1 400V		P488N-1	DF-104	CUB4P1	CUB4P1	GEM-401	4TM-P10
C22	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	1800 10%		DI-1800	DD-182	PM6D2	CCD-182	GP218	10TS-D18
C24	820 10%		DI-820	DD-821	5R5T82	CCD-821	GP382	10TS-T82
C25	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	4.5 N750 5%			DTN-5	C10V5U	CCTN-050	CN7-547	10TCU-V50
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	.01 400V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C30	15000		BPD-015	DD-153	BYA10S15	CCD-153	B-115	5HK-S15
C31	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C32	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C33	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C34	.0033 1000V 10%				DPMS10D33	16DP-2-332	GEM-16233	10TM-D30
C35	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C36	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C37	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C38	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C39	1000 2000V		HVD-30-1000	DD30-102	HVB20D1	3CCD-102	2HV-210	BL-D10
C40	.22 400V		P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C41	82 10%		DI-82	DD-820	L10Q82	CCD-820	GP482	10TS-Q82
C42	82 10%		DI-82	DD-820	L10Q82	CCD-820	GP482	10TS-Q82
C43	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-110	5HK-D10
C44	1000 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C45	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C46	1000		DI-102	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C47	.0047 600V 10%		V84C6D47-10%		PM6D47	6DP-1-472	GEM-16247	6TM-D47
C48	100 10%		1469-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235	MS-31
C49	220 10%		1469-00022	TCZ-220	22R5T1	CM-19B-221K	CNO-322	MS-322
C50	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C51	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C52	.33 400V		P488N-33		PM4P33	4DP-5-334	GEM-4033	
C53	.1 600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C54	120 5000V 5%	† (68) (82)						
C55	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C56	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C57	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C58	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C59	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10

TV PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C60	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C61	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C62	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C63	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10

Note 1. May not be used in some versions.

† Alternate Value.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	EMERSON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg	½	390624	BPL-70	C47S-1meg-Z	B13-137 §	PP16A	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	Not Req.	SK7 §	Not Req.	Push-Push Off-On
R2A	600Ω	½	390618	F3-2		†(QJ-1350	FA62R OS2125	Contrast
B	Shaft			Not Req.				
R3A	500K	½	390619	F1-40		‡(QJ-1277	■(UE4140	Brightness
B	2.5meg	½		R2-76				Height
R4A	1.5meg	½	390620	F1-64		¶(QJ-1278	▲(UE4138	Vert. Hold
B	500K	½		R2-40				Vert. Linearity
R5	150K	½	390621					Horiz. Hold

§ Factory Assembled Part #PPQ13-137 (SK7).
† "CONCENTRIKIT" Equivalent: K-6 Kit with Base Elements and Shafts: B17-105, P17-204 (Panel)
‡ "CONCENTRIKIT" Equivalent: K-6 Kit with Base Elements and Shafts: B11-133, P17-204 (Panel)
(Not available as a factory assembled unit). B11-239, R15-005 (Rear)
¶ "CONCENTRIKIT" Equivalent: K-6 Kit with Base Elements and Shafts: B11-138, P17-204 (Panel)
(Not available as a factory assembled unit). B11-133, R15-005 (Rear)
■ "STA-LOC" Equivalent: FA55L, RU255L, OS2125, IK625.
▲ "STA-LOC" Equivalent: FA155L, RU55L, OS2125, IK625.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R6	470Ω				R48	4.7meg			
R7	1.5meg				R49	820K			
R8	2.2meg				R50	2.2meg			
R9	2200Ω				R51	6800Ω 1W			
R10	15K				R52	33K 1W			
R11	820K				R53	3300Ω			
R12	220K				R54	100Ω 1W			
R13	470Ω				R55	4700Ω			
R14	56Ω				R56	680Ω			
R15	1000Ω				R57	680Ω			
R16	470Ω				R58	22K			
R17	47Ω				R59	22K			
R18	470Ω				R60	27K			
R19	180Ω				R61	1meg			
R20	4700Ω				R62	1meg			
R21	6800Ω				R63	1meg			
R22	39K				R64	47K			
R23	1.2meg				R65	15K 1W			* 10K
R24	470K				R66	1000Ω			
R25	33K				R67	470K			* 150K
R26	220K				R68	330K			
R27	8200Ω				R69	6800Ω			
R28	4700Ω 2W				R70	33K			
R29	4700Ω				R71	220K			
R30	2200Ω				R72	2200Ω			
R31	10Ω			* 3.9Ω	R73	2.2meg ♦			
R32	82K				R74	100Ω			
R33	180K				R75	220Ω			
R34	470K			* 220K	R76	680Ω 1W			
R35	470Ω				R77	120Ω 1W			
R36	220Ω				R78	3.9Ω			
R37	220K				R79	10Ω			
R38	150K				R80	4700Ω			
R39	560K				R81	470Ω 2W			
R40	2200Ω				R82	6Ω 7W	PW10-6Ω	7W-SQ-6Ω	#394518
R41	560Ω				R83	1.0Ω †			#397103
R42	180Ω				R84	28Ω 15W			#397129
R43	18K				R85	680Ω			
R44	820K				R86	680Ω			
R45	100K				R87	470K			
R46	18K 1W				R88	4.7meg 1W♦			
R47	4.7meg				R89	470K ♦			

* Alternate Value
♦ May not be used in some versions.

† Fusible Type
# Emerson Part Number

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	EMERSON PART No.	REPLACEMENT DATA
K1	Sync Sep. Grid	220mmf, 10000mmf, 470K, 2.2meg	923059	
K2	Vert. Integrator	4700mmf, 12000mmf, 16.4K, 56K	923158	

TV PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No	NOTES
L1	1st Video IF	720316					
L2	4i 45MC Trap	720317					
L3	2nd Video IF	720318					
L4	3rd Video IF	720318					
L5	4th Video IF	720316					
L6	RF Choke (4.6uh)	708271A	BC-564	4606	RTC-8518	T819	
L7A	Peaking (100uh)	708346A	TV-194	6112	RTC-8574	T305	
B	Peaking (250uh)		TV-185	6161	RTC-8598	T315	
L8A	4.5MC Trap	720297					
B	1st Sound IF						
L9	Peaking (330uh)	708272A ①	TV-200	6132	RTC-8577	T319	① 500uh (Part #708279A) may be used in some versions.
L10	Peaking (750uh)	708357	TV-206	6148	RTC-8588	T328	
L11	2nd Sound IF	720357					
L12	Quadrature	720336					
L13	RF Choke (10uh)	②	BC-566	4612	RTC-8522	T860	② IRC Part #CL-1.
L14	Fil. Choke (1.5uh)		BC-563	4604	RTC-8516	T856	
L15	Fil. Choke (1.5uh)		BC-562	4604	RTC-8516	T856	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	Merit PART No.	Miller PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.
L16	Horiz. Stabilizer	716122A					HS-11		

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ~	REPLACEMENT DATA: EMERSON PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L17	.240A	20Ω	5 Hy.	737043		C-2343		C-27X	

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	Merit PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	Vert. Output	738170	A-3932 ①			26S70	A-41TX	
T2	Yoke (Horiz. 34MC) (RP) (Vert. 35MC)	708341	MDF-92 ②	PCM-2045 ②	DY-38A ③	Y-16 ②	Y-43-1 ④	
	Alt. Yoke	708353						
	Rear Cover and Centering Device							
T3	Horiz. Output	738169			HO-314			

① Drill new mounting hole(s).
② Connect yoke terminal #3 to Horiz. Output Transformer terminal #6; yoke terminals #2 and #7 to terminal #2; yoke terminal #1 to Horiz. Output terminal #. Use new rear cover and centering device.
③ Connect same as original.
④ Remove Horiz. Damping Network on terminals #1 and #2.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: EMERSON PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	3400Ω	3-4Ω	734188	A-3035 ①	A-3332 ①	34S53 ①	S-12X ①	① Use original frame.

POWER RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: EMERSON PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.285A	617096 *	1N1763 *	40H *	SR500 *	* Silicon Type

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: EMERSON PART No. FUSE	EMERSON PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	M	1 1/4A 250V 5/8			3331.25 (M 1 1/4A 250V 5/8)	3460U	N 1 1/4	HN 3/4 to 1 1/4

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: EMERSON PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M3		817074 *	6GC1 *			* Dual Selenium, Horiz. AFC

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M4	Tuner	471230	VHF, Used in Chassis 120515C, 120541C, STANDARD COIL REPLACEMENT #GGS-422I-A
	Tuner	471231	VHF with UHF Provisions, Chassis 120516D, 120542D
	Tuner	471220	UHF, Chassis 120518D, 120542D
M5	Switch		Local-Fringe-Normal (AGC), DPDT Slide Type, Mechanically Ganged with a SPST Slide Type

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8483 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

FM–AM TUNER PARTS LIST AND DESCRIPTIONS

120533B

TUBES

ITEM No.	GENERAL ELECTRIC * USE	GENERAL ELECTRIC * TYPE	RAYTHEON * SYLVANIA * ITEM No.	RAYTHEON * SYLVANIA * USE	RAYTHEON * SYLVANIA * TYPE
V15	FM RF Amp. - FM Converter	6DT8	V17	2nd FM IF Amp.	6BA6
V16	1st FM IF Amp.	6BA6	V18	AM Converter	6BE6
			V19	AM IF Amp.	6BA6

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT.	REPLACEMENT DATA: EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C84	4	50	925474	PRS400	BBR4-50	TT50X4	TD-4-50	TVA-1402	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C65	8.2 NPO ±.5mmf		NPO-DI 8.2		C10V82C			10TCC-V82
C66	1000		BPD-001	DD-102	BYA10DI	CCD-102	B-310	5HK-D10
C67	1000		BPD-001	DD-102	BYA10DI	CCD-102	B-310	5HK-D10
C68	18 NPO		NPO-DI 20	TCZ-18	C10QJ8C	CCTO-180	CNO-418	10TCC-Q18
C69A	15 N150 7½							10TCP-Q15
B	15 N150 7½							10TCP-Q15
C70	5 N750			DTN-5	C10V5U	CCTN-050	CNT-550	10TCU-V50
C71	3-15							
C72	51 N750	† (43)		TCN-51	C10Q51U			
C73	2.6 NPO ±.5mmf		NPO-DI 3.3	DTZ-3R3	C10V4C	CCTO-3R3	CNO-533	10TCC-V39
C74	22 N750		N750-DI 22	DTN-22	C10Q22U	CCTN-220	CNT-422	10TCU-Q22
C75	5.2 N470							
C76	3.6 N750 ±.25mmf						CNT-533	10TCU-V33
C77	1000		EF-001	MFT-1000		CCF-102	CT280A	
C78	1000		EF-001	MFT-1000		CCF-102	CT280A	
C79	1000		EF-001	MFT-1000		CCF-102	CT280A	
C80	1000		EF-001	MFT-1000		CCF-102	CT280A	
C81	10000		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C82	10000		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C83	150 N750 10%		N750-DI 150	DTN-150	C10T15U	CCTN-151	CNT-315	10TCU-T15
C84	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C85	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C86	10000		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C87	10000		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C88	330 10%		DE-330	LOT33		CCD-331	GP333	10TS-T33
C89	330 10%		DE-331	LOT33		CCD-331	GP333	10TS-T33
C90	330 10%		DE-330	LOT33		CCD-331	GP333	10TS-T33
C91	680		BPD-00068	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C92	.047 400V		P468N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	47TM-S47
C93	.01 400V		P468N-01	DD-103	CUB4S1	4DP-1-103	GEM-411	47TM-S10
C94	.047 400V		P468N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	47TM-S47
C95	.047 400V		P468N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	47TM-S47
C96	220		DI-220	DD-221	L07T22	CCD-221	B-322	10TS-T22
C97	.047 400V		P468N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	47TM-S47
C98	1000		BPD-01	DD-103	BYA10SI	CCD-103	B-110	5HK-S10
C99	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C100	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C101	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22

† Alternate Value

RESISTORS

All wattages 1/2 watt, or less, unless otherwise stated.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No	WORKMAN TV PART No	REMARKS
R90	10K			
R91	56Ω			
R92	100K			
R93	10K			
R94	220K			
R95	4.7meg			
R96	100Ω			
R97	1000Ω			
R98	8.2meg			
R99	1.5meg			
R100	470K			
R101	330Ω			
R102	330Ω			
R103	100Ω			
R104	68K			
R105	1.5meg			
R106	1000Ω			
R107	680Ω			
R108	1000Ω			
R109	6800Ω			
R110	22meg			
R111	22K			

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No	WORKMAN TV PART No	REMARKS
R112	220K			
R113	330Ω			
R114	150Ω			
R115	3.3meg			
R116	1meg			
R117	47K			
R118	10meg			
R119	15meg			
R120	270Ω			
R121	560Ω 1W			
R122	180Ω 1W			
R123	33Ω 5W	PW5-33Ω	5W-SQ-33Ω	#394214
R124	33Ω 5W	PW5-33Ω	5W-SQ-33Ω	#394214
R125	180Ω 1W			

Emerson Part Number

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	EMERSON PART No.	REPLACEMENT DATA
K3	FM Antenna Filter	470mmf, .3-1meg	923152	Centralab RC-471 Sprague ACI-1
K4	FM Antenna Filter	470mmf, .3-1meg	923152	Centralab RC-471 Sprague ACI-1

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No	NOTES
L18	2nd FM IF	720351	FM-256	1462-PC	RTC-9046		
L19	Ratio Detector	708358	FM-257	1465-PC	RTC-9053		
L20	Loop Antenna	700146					
L21	AM Osc.	716119					
L22	1st AM IF	720259-3	BC-556	13-PC1	RTC-8541	T814	
L23	2nd AM IF	720259-4	BC-557	13-PC2	RTC-8542	T815	
L24	Fil. Choke (3.3uh)		BC-564	4608	RTC-8518	T858	
L25	Fil. Choke (3.3uh)		BC-564	4608	RTC-8518	T858	
L26	Fil. Choke (3.3uh)		BC-564	4608	RTC-8518	T858	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: EMERSON PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M6	1N542	817082 *		1N295 *	1N295 *	* FM Det., Matched Pair, Pigtail
M7	1N542	817082 *		1N295 *	1N295 *	* AM Det., Pigtail
M8	1N294	*		1N80 *	1N80 *	† AFC (Part of FM Tuner Unit)
M9		†				

MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
M10	Tuner	471161A	FM, Complete
M11	Tuning Cap.	900189	AM, 2 Gang
M12	Switch	810186	Function Selector, Rotary Wafer Type
M13	Switch	810186	AFC, Rotary Wafer Type

AMP PARTS LIST AND DESCRIPTIONS

120536B

TUBES

ITEM No.	GENERAL ELECTRIC * USE	GENERAL ELECTRIC * TYPE	RAYTHEON * SYLVANIA * ITEM No.	RAYTHEON * SYLVANIA * USE	RAYTHEON * SYLVANIA * TYPE
V20	Left Channel AF Amp. - Right Channel AF Amp.	12AX7	V21	Left Channel Output	25EH5
			V22	Right Channel Output	25EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: EMERSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C102A	●80	160	925470	PW15-13-70				PCL8-3447.2*	
B	▲100	160							
C	40	150							
C103A	60	160	925473	PR3-020	BBRQ0789.5	W7458	TDLD-8	TVA-4618	
B	60	150					TD-60-250		
C	40	160							
C104	250	15	925461	PRE210	BR2501	TC50026	TD-250-15	TVA-1181	
C105	4	15NP	925391	PRS7405	BBR4-150	TCN504		TVANS-1150 *	
C106	4	15NP	925391	PRS7405	BBR4-150	TCN504		TVANS-1150 *	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

EMERSON CHASSIS 120515C, 516D, 533B, 534B, 535B, 536B, 541C, 542D

FOLDER 1

AMP PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C107	33 N750		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C108	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C109	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C110	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C111	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C112	.022 600V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C113	33 N750		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C114	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C115	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C116	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C117	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C118	.022 600V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C119	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C120	.033 400V		P488N-033	DD-303	CUB6S33	4DP-2-333	GEM-4133	4TM-S33
C121	.22 600V		P688N-22		CUB6P22	6DP-5-224	GEM-6022	6TM-P22
C122	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	EMERSON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R126A	2meg	1/2	390642	BT-175 *			–	Loudness, Left Channel
	400K Tap							
B	2meg	1/2		STR-175 *				Loudness, Right Channel
	400K Tap							
R127A	250K	1/2	390595	B-51	AD47-250K-Z		FA254A	Bass, Left Channel
B	250K			SR-51	Not Req.		RU254A	Bass, Right Channel
C	Shaft			Not Req.	FS-3		CS3500	
R128A	500K	1/2	390641	BPL-59	C47S-500K-S	B11-133	PP55L	Balance
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	Not Req.	SK7	Not Req.	
R129A	500K	1/2	390640					Treble, Left Channel
B	500K							Treble, Right Channel

* Do not use 1meg Tap.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R130	47K			
R131	6.8meg			
R132	470K			
R133	33Ω 1W			
R134	47K			
R135	6.8meg			
R136	470K			
R137	1000Ω			

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R138	1000Ω			
R139	150Ω 5W	PW5-150Ω	5W-SQ-150Ω	#397132
R140	820Ω 3W	PW5-820Ω	3G-820Ω	
R141	100K			
R142	22Ω			
R143	68K			
R144	66Ω 7W	PW10-66Ω	7W-SQ-66Ω	#397155
R145	100Ω			

\# Emerson Part Number

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	EMERSON PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T5	3300Ω	6-8Ω	734181	A-2902①	A-2203 ①	24S06 ①	S-53X ①	① Use original frame.
T6	3300Ω	6-8Ω	734181	A-2902①	A-2203 ①	24S06 ①	S-53X ①	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	EMERSON PART No.	QUAM PART No.	
SP1	8"	PM	6-8Ω	180165A	8A21Z6	
SP2	3½"	PM	6-8Ω	180194	3A15TZ5.4	
SP3	8"	PM	6-8Ω	180165A	8A21Z6	
SP4	3½"	PM	6-8Ω	180194	3A15TZ5.4	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	EMERSON PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M14	.125A	817088 *	1N1763 *	40H *	SR500 *	* Silicon

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

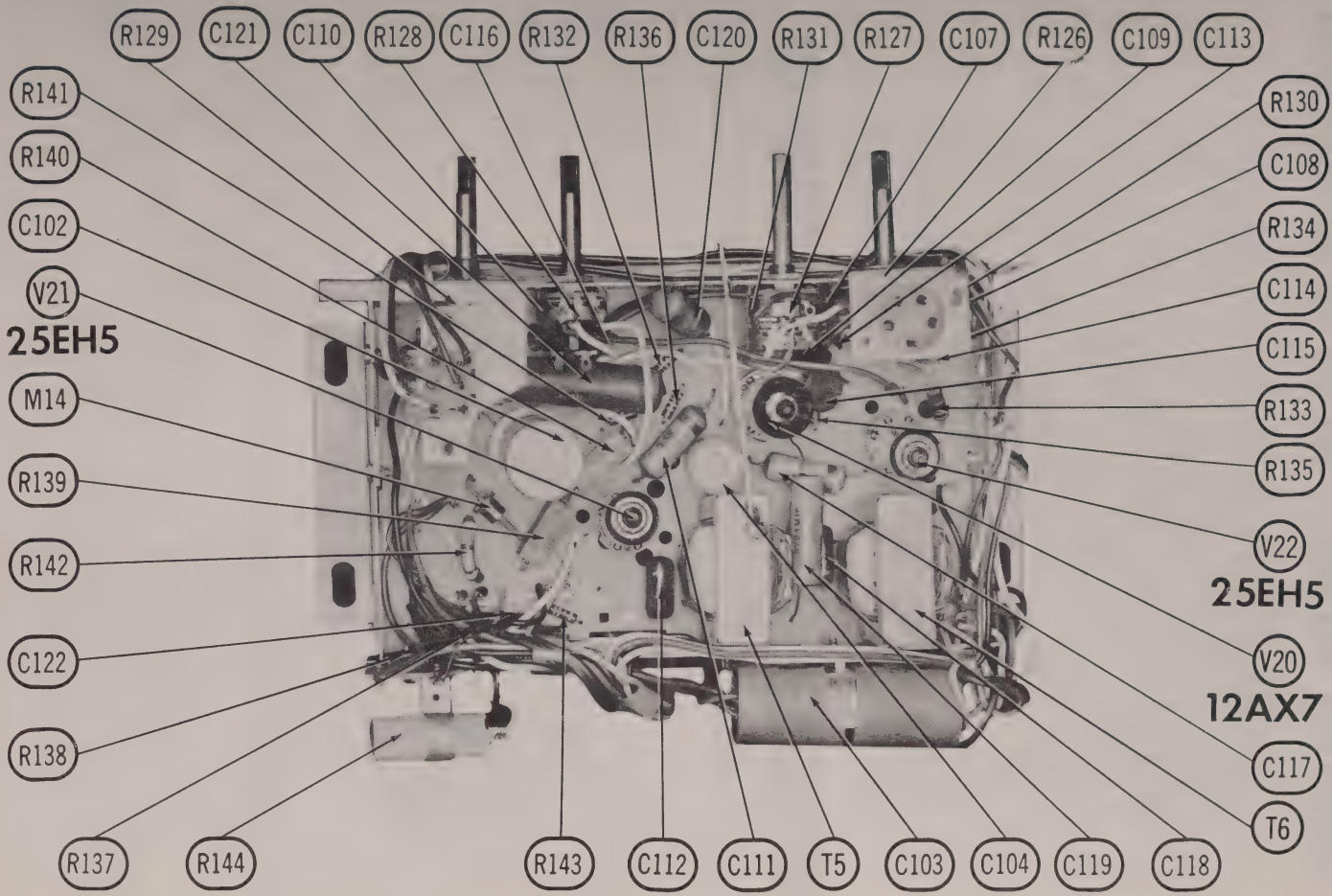
ITEM No.	REPLACEMENT DATA								NOTES
	EMERSON PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M15	962326	Not Req.	13TB	Not Req.	26S	S1-1 * & S3-3 *	8TA4-S *	N-8TA-S *	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

ITEM	PART NO.	MODEL 1528	1529	1530	1531	1532	1533	1534	1535	1536	1537	1538	1539
Safety Glass	520294	X	X	X	X								
Mask (For Mah. Cabinets)	461326B					X	X	X	X	X	X	X	X
Mask	461266A	X	X	X	X								
Mask	461326A					X	X	X	X	X	X	X	X
Knob, VHF Channel Sel. *	461191B					X		X		X		X	
Knob, VHF Channel Sel. *	461192B						X		X		X		X
Knob, VHF Channel Sel.	461191B	X		X									
Knob, VHF Channel Sel.	461192B		X		X								
Knob, VHF Channel Sel.	461191C					X		X		X		X	
Knob, VHF Channel Sel.	461192C						X		X		X		X
Knob, UHF Tuning *	461270B						X		X		X		X
Knob, UHF Tuning	461270B		X		X								
Knob, UHF Tuning	461270C						X		X		X		X
Knob, Fine Tuning	461201B	X	X	X	X								
Knob, Contrast, Vert. Hold, Brightness	461184	X	X	X	X								
Knob, Contrast, Vert. Hold, Brightness	461339A					X	X	X	X	X	X	X	X
Knob, Contrast, Vert. Hold, Brightness *	461339					X	X	X	X	X	X	X	X
Knob, Volume (TV *	461190C					X	X	X	X	X	X	X	X
Knob, Volume (TV)	461190C	X	X	X	X								
Knob, Volume (TV)	461190D					X	X	X	X	X	X	X	X
Knob, Loudness, Bass *	461338					X	X	X	X				
Knob, Loudness, Bass *	461334									X	X	X	X
Knob, Loudness, Bass	461338A					X	X	X	X				
Knob, Loudness, Bass	461334									X	X	X	X
Knob, Balance, Treble *	461337					X	X	X	X				
Knob, Balance, Treble *	461334									X	X	X	X
Knob, Balance, Treble	461337A					X	X	X	X				
Knob, Balance, Treble	461334									X	X	X	X
Knob, AM Tuning	461341							X	X				
Knob, AM Tuning	461182											X	X
Knob, FM Tuning	461342							X	X				
Knob, FM Tuning	461182											X	X
Knob, Function & AFC	461343							X	X				
Knob, Function & AFC	461334									X	X	X	X
Knob, Speed Control (Changer)	962808					X	X	X	X	X	X	X	X
Knob, Reject (Changer)	962810					X	X	X	X	X	X	X	X

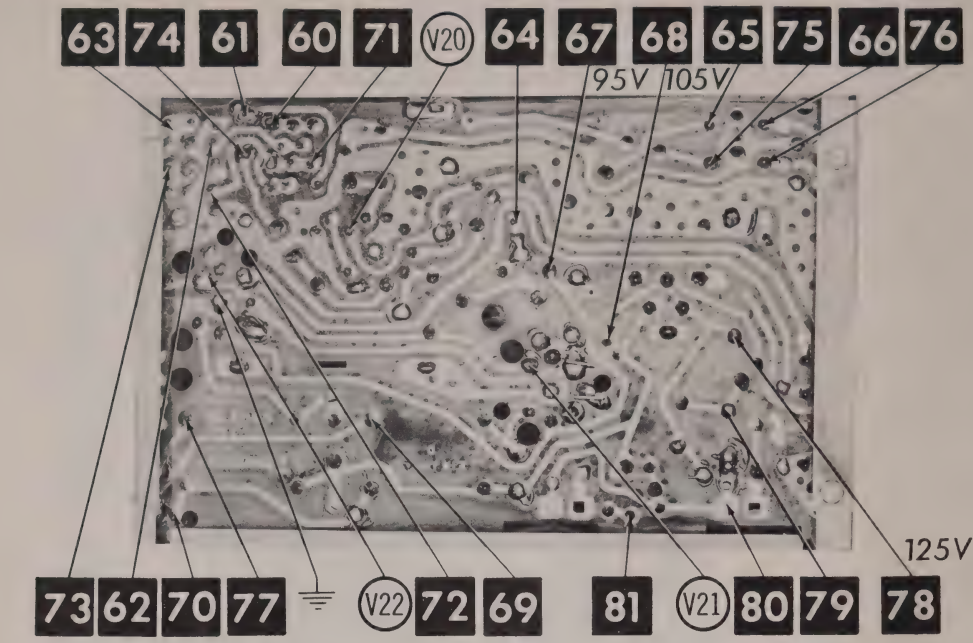
* USED WITH MAHOGANY MODELS



AMP. CH. 120536B - TOP VIEW

EMERSON CHASSIS 120515C, 516D, 533B, 534B, 535B, 536B, 541C, 542D

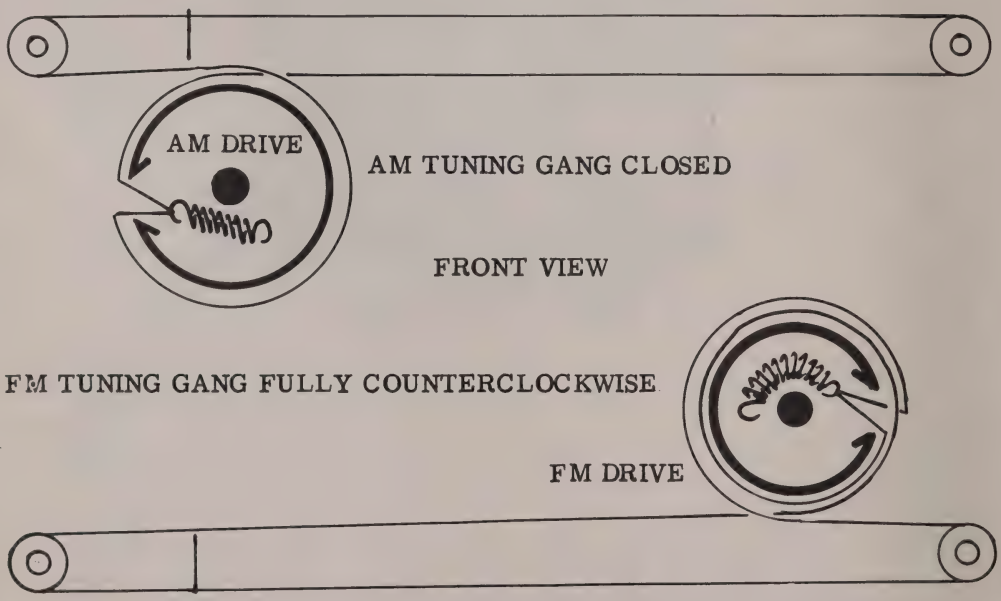
FOLDER 1



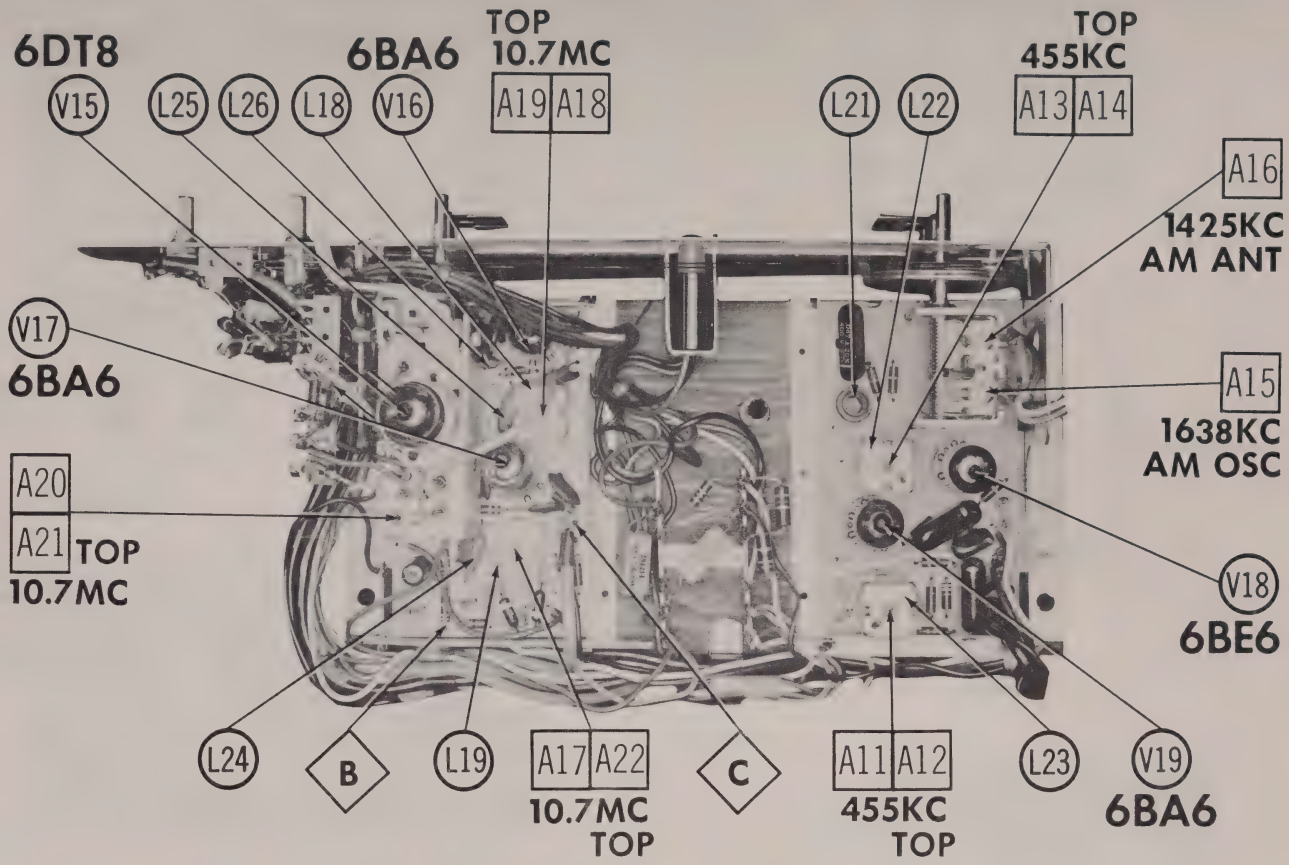
A Howard W. Sams CIRCUITRACE Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

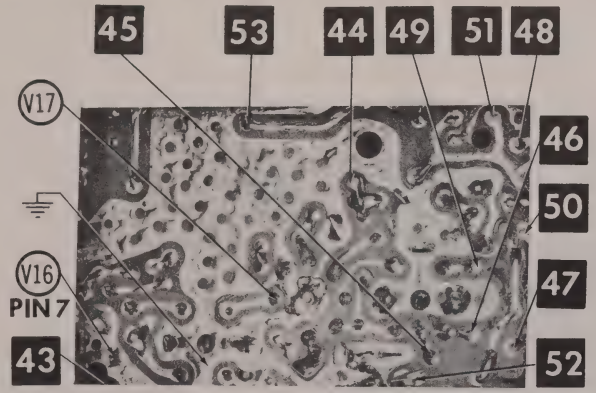
AMP. CH. 120536B PRINTED BOARD



FM-AM TUNER CH. 120533B DIAL CORD STRINGING



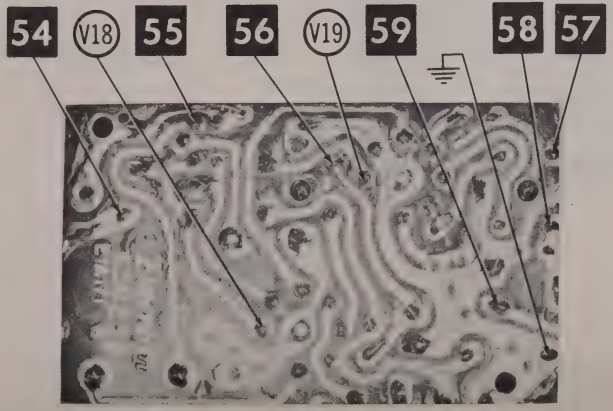
FM-AM TUNER CH. 120533B TOP VIEW - ALIGN., INDUCTOR, TUBE IDENT.



A Howard W. Sams CIRCUITRACE* Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

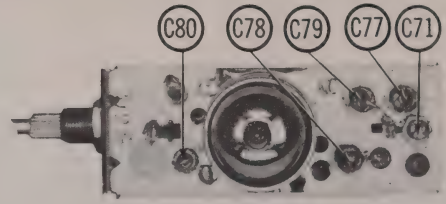
FM TUNER PRINTED BOARD

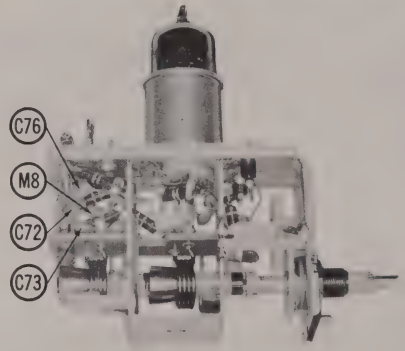


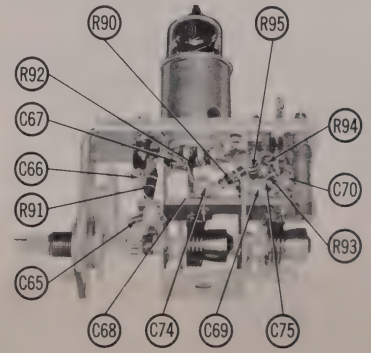
A Howard W. Sams CIRCUITRACE* Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

AM TUNER PRINTED BOARD







FM RF SUBCHASSIS

VHF TUNER PARTS LIST AND DESCRIPTIONS

471230

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	2FH5	V202	Mixer - Osc.	5CG8

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	120 N750 10%			TCN-120	C10T12U	CCTN-121	CN7-312	10TCU-T12
C202	15 10%		NPO-DI 15	DTZ-15	C10Q15U	CCTO-150	CNO-415	10TCC-Q15
C203	30 7%							
C204	15 7%		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C205	1000		EF-001	MFT-1000		CCF-102	CT280A	
C206	1.8-7			829-7				
C207	100 5%							
C208	.5-3.5							
C209	33		NPO-DI 33	DTZ-33	C10Q33C	CCTO-330	CNO-433	10TCC-Q33
C210	.5-3.5							
C211	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C212	1000		BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C213	6.8 ±.25mmf		NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C214	18 N220 10%					*		
C215	1000		EF-001	MFT-1000		CCF-102	CT280A	
C216	1000		EF-001	MFT-1000		CCF-102	CT280A	
C217	1000		EF-001	MFT-1000		CCF-102	CT280A	
C218	1000		EF-001	MFT-1000		CCF-102	CT280A	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	47K				R205	1000Ω			
R202	1000Ω				R206	4700Ω			
R203	4700Ω				R207	4700Ω			
R204	220K								

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	EMERSON PART No.	REPLACEMENT DATA
K201	Antenna Filter	470mmf, .3-1meg		Centralab RC-471 Sprague AC1-1
K202	Antenna Filter	470mmf, .3-1meg		Centralab RC-471 Sprague AC1-1

VHF TUNER ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Connect the negative lead of a 2.5 volt bias supply to point (T). Positive to chassis.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (T). Low side to chassis.	A201 A202 A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	"	213MC	211.25MC 215.75MC	13	"	A204	Adjust for maximum amplitude of response similar to Fig. 201. Adjust by expanding or compressing coil turns.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47KΩ across Video Det. load.	A216	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

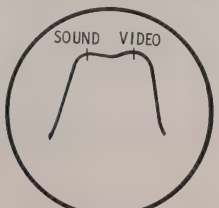


FIG. 201

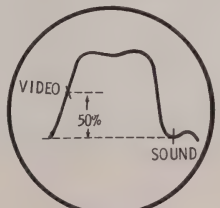
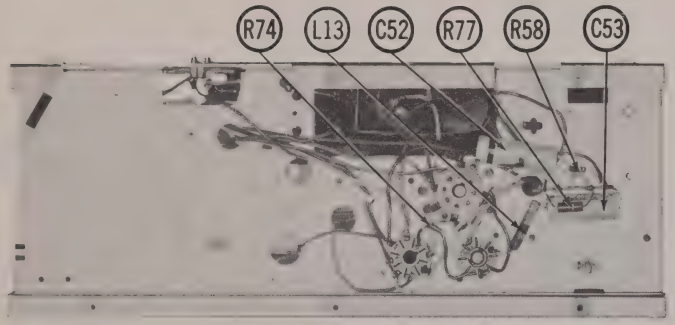
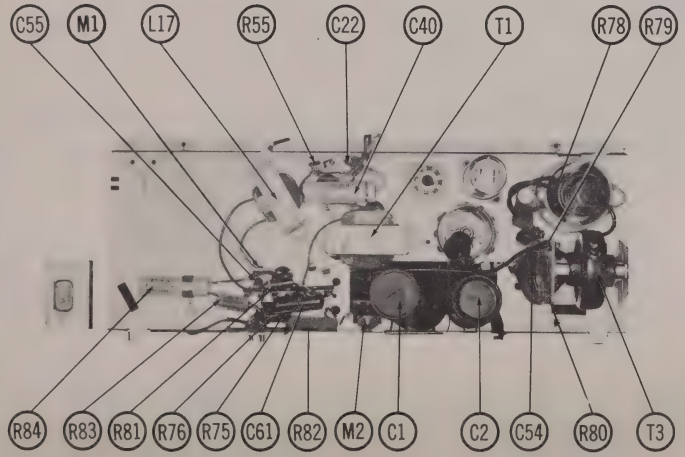


FIG. 202



TV POWER CHASSIS—BOTTOM VIEW



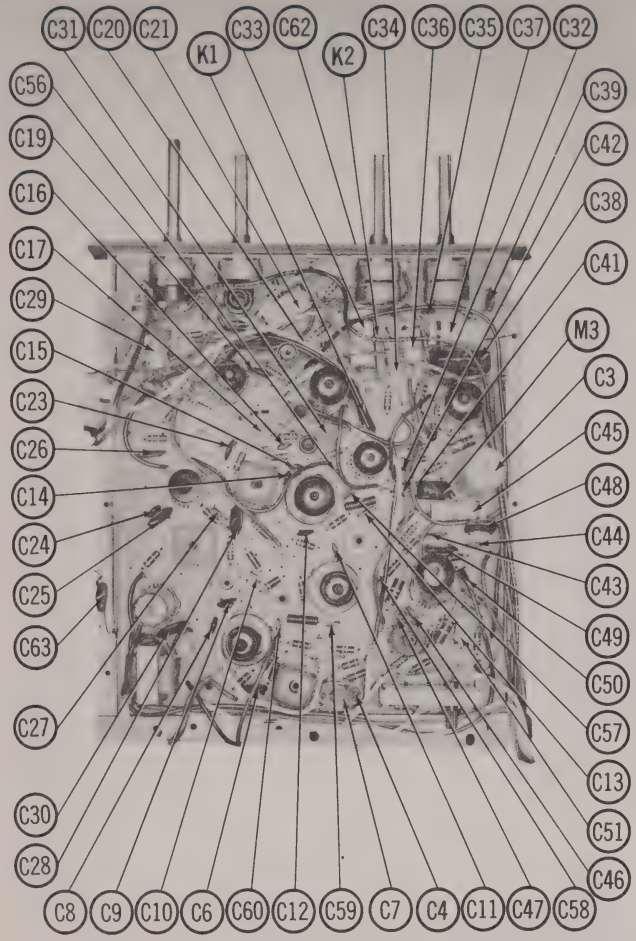
TV POWER CHASSIS—TOP VIEW

TV RESISTANCE MEASUREMENTS

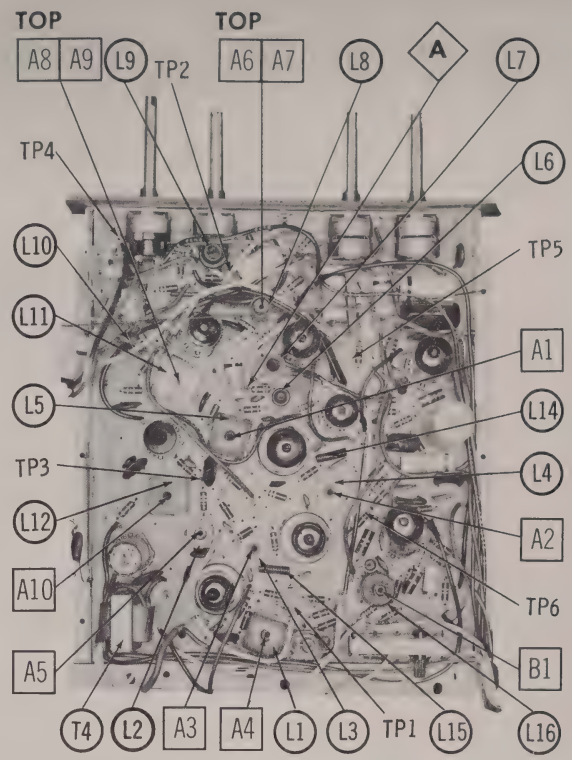
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3CB6	1.1meg	56Ω	5Ω	6Ω	†610Ω	†610Ω	0Ω		
V2	3CB6	1.1meg	47Ω	6Ω	7Ω	†610Ω	†610Ω	0Ω		
V3	5AS8	†610Ω	.1Ω	180Ω	7Ω	9Ω	4700Ω	0Ω	.1Ω	†610Ω
V4	8EB8	0Ω	•1meg	•†6meg	16Ω	11Ω	•65Ω	400K	†2300Ω	†4800Ω
V5	3AU6	1.4Ω	0Ω	11Ω	10Ω	†610Ω	†610Ω	220Ω		
V6	3DT6	5.4Ω	560Ω	9Ω	10Ω	†240K	†2300Ω	560K		
V7	12C5 12CU5	180Ω	•0Ω	24Ω	30Ω	NC	†470Ω	†640Ω		
V8	3CS6	†820K	0Ω	16Ω	17Ω	†45K	†18K	2meg		
V9	12DB5	†140Ω	NC	NC	22Ω	17Ω	•2.7meg	100Ω	NC	†260Ω
V10	6CG7	†300K	•500K	1000Ω	24Ω	22Ω	†15K	1.2meg	1000Ω	0Ω
V11	12DQ6B	NC	35Ω	NC	†200Ω	250K	TP	40Ω	0Ω	TOP CAP †8.6Ω
V12	12D4	NC	NC	†300K	NC	†25Ω	NC	35Ω	30Ω	
V13	1G3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †410Ω
V14	Z3XP4	0Ω	4700Ω	Pin 6 0Ω	Pin 10 †150K	Pin 11 •110K	Pin 12 2Ω			
V201	2FH5	0Ω	•1meg	2Ω	3Ω	†1600Ω	0Ω	0Ω		
V202	5CG8	4700Ω	†5300Ω	0Ω	5Ω	3Ω	†1600Ω	†610Ω	0Ω	225K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM OUTPUT OF M1.
† MEASURED FROM PIN 3 OF V12.

NC NO CONNECTION
TP TIE POINT

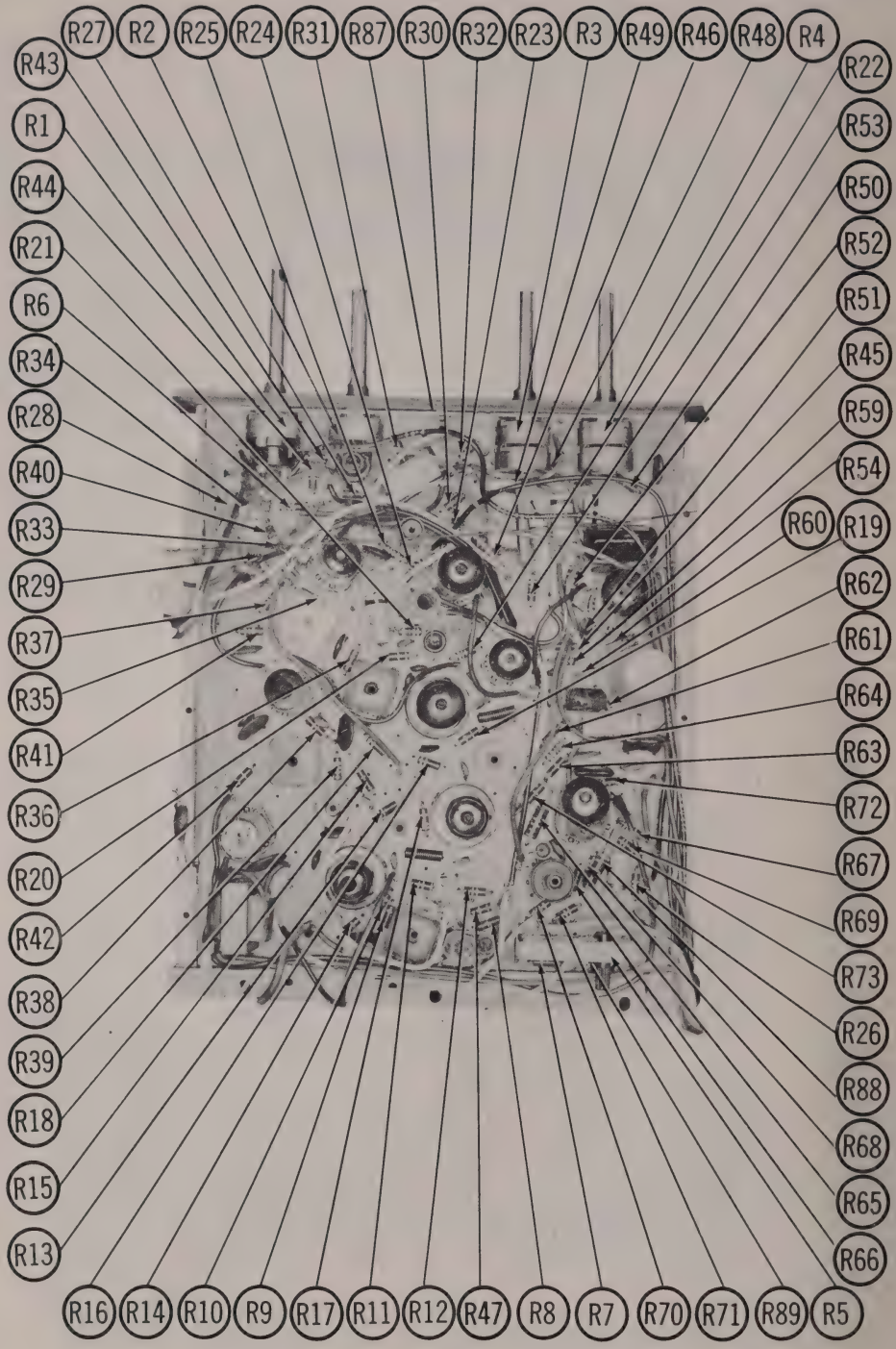


TV PRINTED BOARD
CAPACITOR & MISC. IDENT.

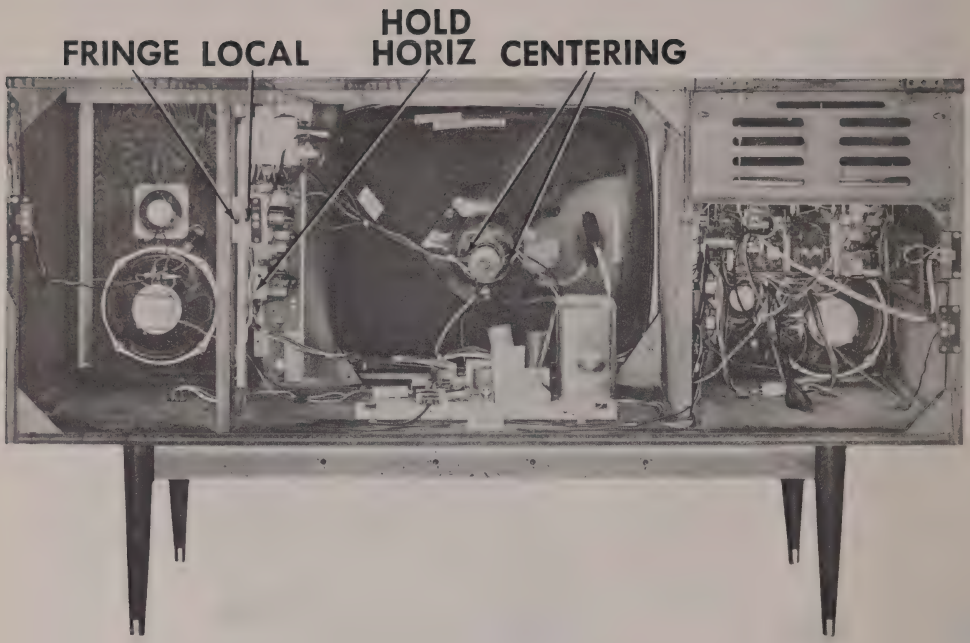


TP1	-1.5V	IF AGC
TP2	75V	VIDEO OUTPUT PLATE
TP3	-4V	AUDIO DET.
TP4	0V	AUDIO DET OUTPUT
TP5	30V	SYNC SEP PLATE
TP6	1.5V	HORIZ MULT CONTROL GRID

TV PRINTED BOARD - ALIGN. & INDUCTOR IDENT.



TV PRINTED BOARD - RESISTOR IDENT.



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Tune in a TV signal and set the "Fringe-Local" fully counterclockwise.

Connect a clip lead across the Horizontal Stabilizing Coil (L16). Connect another clip lead from TP-6 to chassis.

Adjust the Horizontal Hold until the picture synchronizes horizontally. In most cases the picture will appear to float back and forth across the screen.)

Remove the clip lead from L16. Adjust the Horizontal Frequency Slug (B1) until the picture again synchronizes horizontally.

Remove the clip lead from TP-6 and chassis. The picture should then lock in solid.

DISASSEMBLY INSTRUCTIONS

TV CHASSIS REMOVAL MODEL 1534

1. Remove 16 wood screws holding rear cover. Remove rear cover.
2. Remove 6 push-on type knobs in front.
3. Remove speaker leads, picture tube socket, yoke, high voltage lead, focus lead, and plug to TV Printed Board.
4. Remove 6 chassis bolts holding power chassis.
5. Remove chassis.
6. Remove VHF antenna terminal bracket from cabinet.
7. Remove 6 screws holding TV Printed Board.
8. Remove TV Printed Board.

PICTURE TUBE REMOVAL

1. Remove 4 screws (at bottom of cabinet) holding mask.
2. Tilt mask out and remove.
3. Remove rear cover, picture tube socket, yoke, hi voltage lead, and focus lead.
4. Remove 4 screws at front holding picture tube mounting bracket.
5. Pull picture tube out front with mounting bracket.

PHOTOFACT® Folder with CIRCUITRACE®

TRUETONE
MODEL 2DC3140A

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The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

TRUETONE
MODEL 2DC3140A

MODEL 2DC3140A

TRUETONE
MODEL 2DC3140A

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PHOTOFACT® Folder with CIRCUITRACE®

TRUETONE
MODEL 2DC3140A

TRUETONE
MODEL 2DC3140A

MODEL 2DC3140A

TRUETONE
MODEL 2DC3140A

TRADE NAME	Truetone, Model 2DC3140A
SUPPLIER	Western Auto Supply Co., 2107 Grand Avenue, Kansas City 8, Missouri
TYPE SET	Television Receiver
TUBES	VHF - Seventeen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 180 Watts, 1.6 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

It is necessary to remove the chassis and picture tube for safety glass cleaning. (See "Disassembly Instructions", Page 16.

FUSE

A 3/4A S/B fuse is used for LV power supply protection. (For location, see "Tube Placement Chart".)

A fuse wire is used for filament protection. (For location, see M2 in photo "Lower Chassis - Front View".)

TUNER OSCILLATOR ADJUSTMENT

To touch up VHF Oscillator remove brass insert plug in rear cover.

AGC

The AGC may be varied by means of an AGC Control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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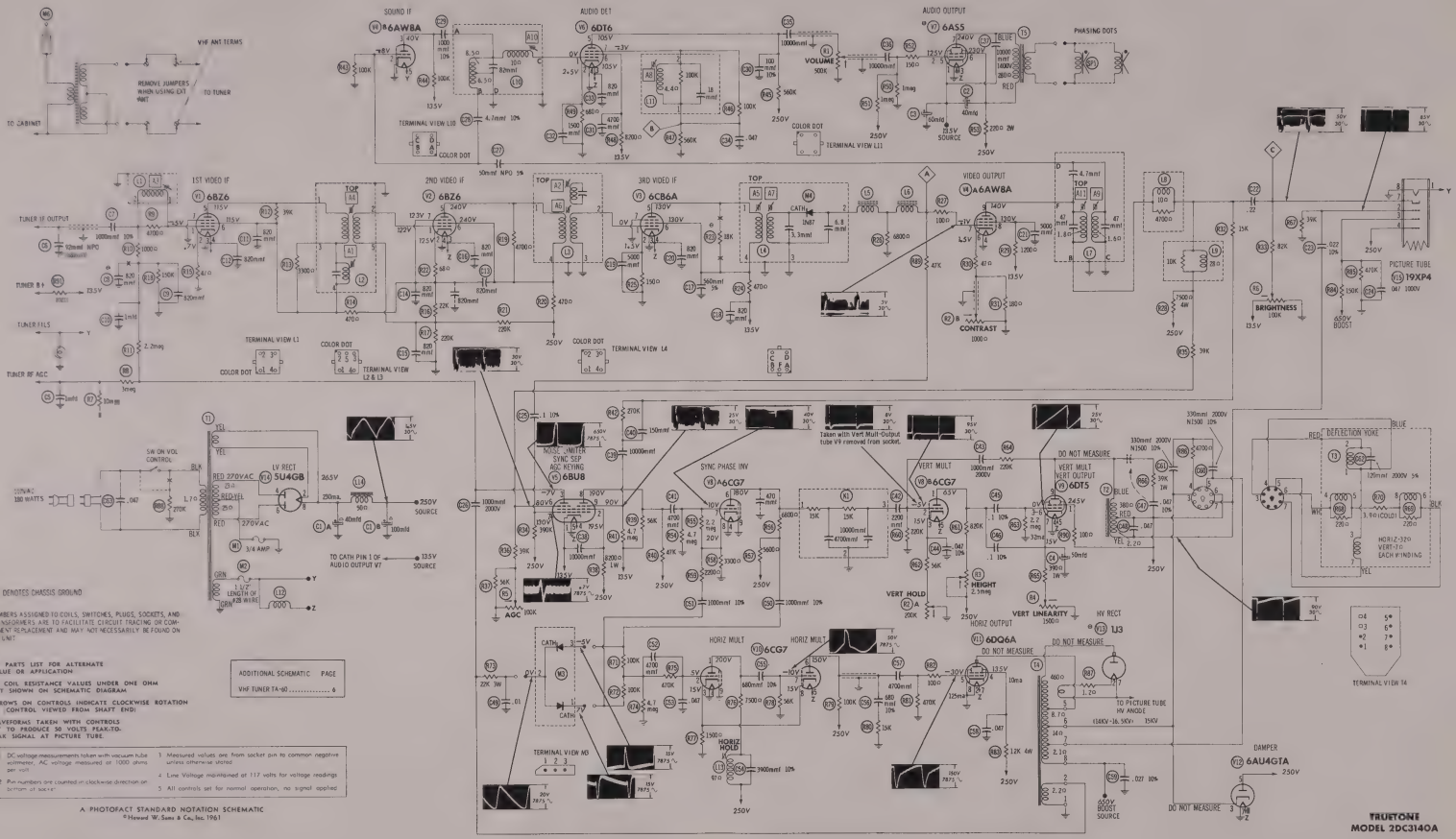
KA523

SET 521 FOLDER 2


TRUETONE
MODEL 2DC3140A
SOUND IF
AUDIO DET
AUDIO OUTPUT
1ST VIDEO IF
2ND VIDEO IF
3RD VIDEO IF
VIDEO OUTPUT
SYNC PHASE INV
VERT MULT
HORIZ MULT
HORIZ OUTPUT
LV RECT
HV RECT
DAMPER
PICTURE TUBE
19XP4
VHF ANT TERMS
TO TUNER
TO CABINET
REMOVE JUMPERS WHEN USING EXT ANT
TUNER IF OUTPUT
TUNER B+
TUNER AFC
TUNER AGC
SW ON VOL CONTROL
120VAC 180 WATTS
3/4 AMP
270VAC
250V SOURCE
13.5V SOURCE
VOLUME
CONTRAST
BRIGHTNESS
HEIGHT
VERT HOLD
VERT LINEARITY
HORIZ HOLD
AGC
DEFLECTION YOKE
PHASING DOTS
COLOR DOT
TERMINAL VIEW L10
TERMINAL VIEW L11
TERMINAL VIEW L1
TERMINAL VIEW L2 & L3
TERMINAL VIEW L4
TERMINAL VIEW M3
TERMINAL VIEW T4
DO NOT MEASURE
TO CATH PIN 1 OF AUDIO OUTPUT V7
TO PICTURE TUBE HV ANODE
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
ADDITIONAL SCHEMATIC PAGE
VHF TUNER TA-60 6
1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt.
2 Pin numbers are counted in clockwise direction on bottom of socket.
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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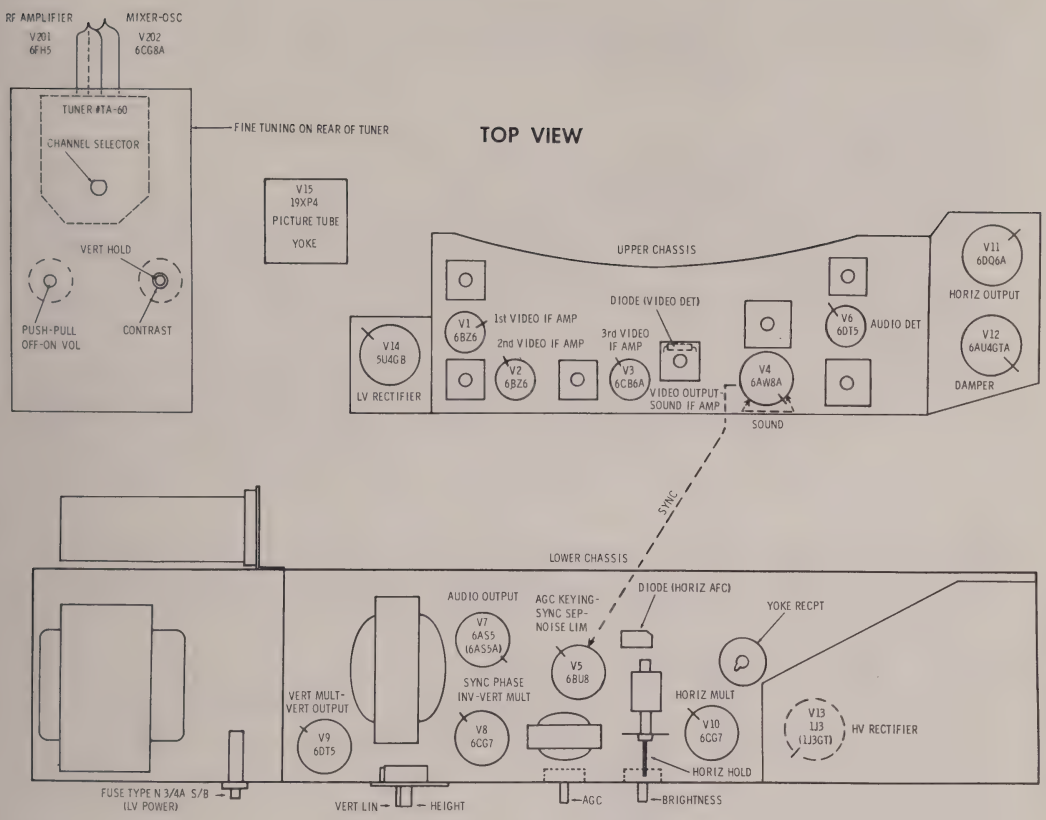
TRUETONE
MODEL 2DC3140A

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (LV Power), V15, Fuse (Fil.)

SWEEP FAILURE
No raster, has sound V10, V11, V12, V13, V15
No vertical deflection V8, V9
Poor vert. linearity or foldover V8, V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, V14
Vert. off freq. V8, V9
Horiz. off freq. Diode (Horiz. AFC), V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V15
Has pic, no sound V4, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V5, V8
No horiz. sync V5, V8
No vert. or horiz. sync V5, V8

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Set Contrast fully clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	44MC (10MC Swp)	41.25MC	Any non-interfering channel	Vert. Amp. thru 47K to point (A). Low side to chassis. (Across Video Det. load)	A1	Adjust to place marker in 41.25MC trap notch. (See Fig. 1).
2.	"	"	"	47.25MC	"	"	A2	Adjust to place marker in other trap notch.
3.	"	"	"	42.75MC 45.75MC	"	"	Mixer Plate Coil & A3 thru A7	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Adjust Mixer Plate Coil and A3 for maximum gain. A4 and A5 to shape high frequency side of response curve. A6 and A7 is adjusted to shape low frequency side.

SOUND IF ALIGNMENT

Connect an output meter across speaker voice coil.
Connect the DC probe of the VTVM to point (B). Common to chassis. Tune in a strong air signal and adjust A8 for maximum output. If two peaks occur during this adjustment, use the one resulting in the highest reading on the VTVM.
Reduce the signal strength by disconnecting the antenna. Adjust A9 and A10 for maximum undistorted sound. Further reduce the signal by moving the antenna lead further away. Retouch A9 and A10 for maximum undistorted sound. Repeat entire procedure if necessary.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.05mfd	High side to point (A). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	AC probe to point (C). Common to chassis. (Use 0-10VAC scale).	A11	Adjust for MINIMUM deflection.

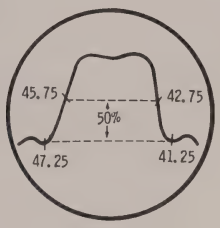
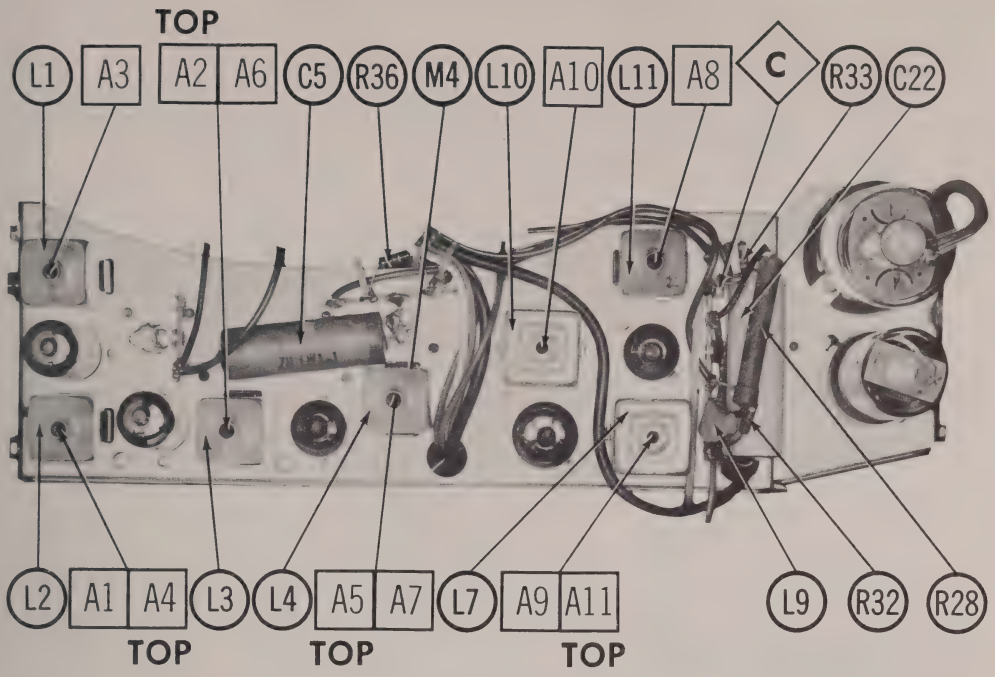
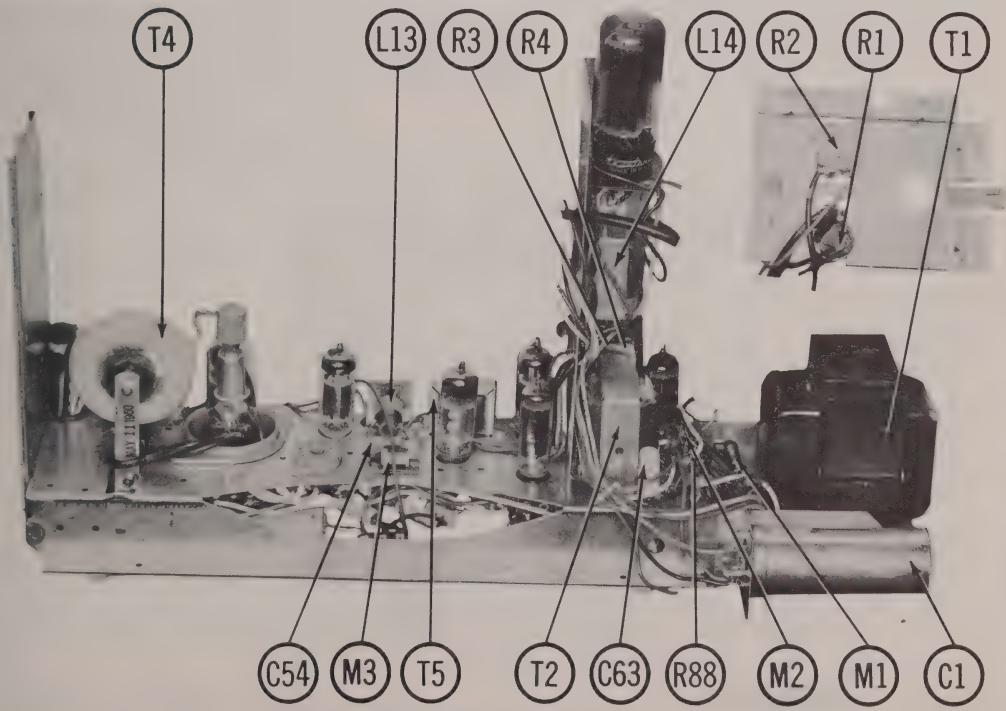


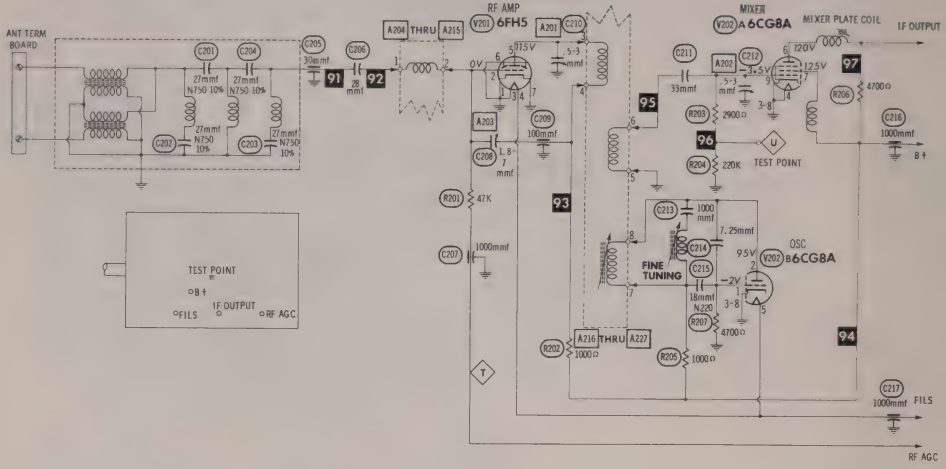
FIG 1



UPPER CHASSIS - TOP VIEW



LOWER CHASSIS - FRONT VIEW



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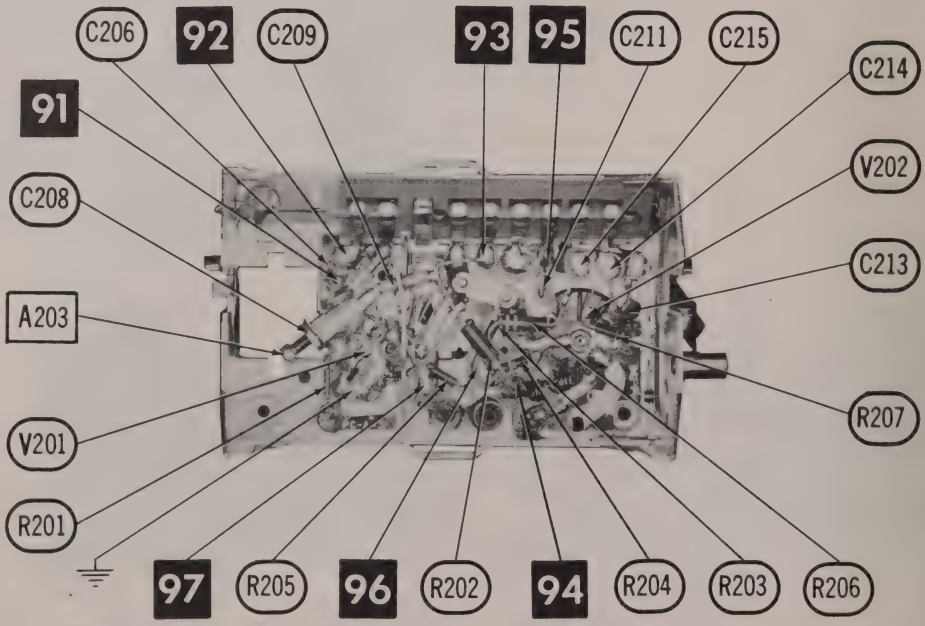
VHF TUNER TA-60



A Howard W. Sams CIRCUITRACE Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

VHF TUNER TA-60 - BOTTOM VIEW

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested alignment tools: A201, A202, A203.....GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512. 2515, 2522, 2523, 2525, 2537
A204 thru A215..... None Required
A216 thru A227..... GENERAL CEMENT #8282
WALSCO #2526

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Connect the negative lead of a 2.5 volt bias supply to point ⓣ. Positive to chassis.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point ⓣ. Low side to chassis.	A201 A202 A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	"	213MC	211.25MC 215.75MC	13	"	A204	Adjust for maximum amplitude of response similar to Fig. 201. Adjust by expanding or compressing coil turns.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

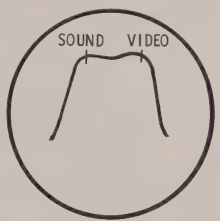


FIG.201

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load.	A216	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

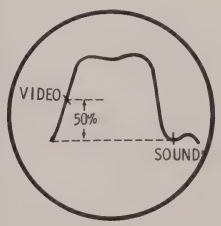


FIG.202

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC / RAYTHEON / SYLVANIA)
V1	1st Video IF Amp.	6B26
V2	2nd Video IF Amp.	6B26
V3	3rd Video IF Amp.	6CB6A
V4	Video Output - Sound IF Amp.	6AW8A
V5	AGC Keying - Sync Sep. - Noise Limiter	6BU8
V6	Audio Detector	6DT6
V7	Audio Output	6AB5 (6AB5A) *
V8	Sync Phase Inv. - Vert. Mult.	6CG7
V9	Vert. Mult. - Vert. Output	6DT5
V10	Horiz. Mult.	6CG7
V11	Horiz. Output	6DQ6A
V12	Damper	6AU4GTA
V13	HV Rectifier	1J3 (1J3GT) *
V14	LV Rectifier	5U4GB

* Alternate Value

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: TRUETONE PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V15	19XP4		19XP4 ①		19XP4 ②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT.	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	350	EC-115	AFH2-64-25	B0483	FP347	TMD-2500	TVL-2780	
B	100	350							
C2	40	200	EC-113	PRR580	BR4025	TC58	TD-40-350	TVA-1511	
C3	60	200	EC-131	PRR590	BR6025	TC68	TD-60-250	TVA-1513	
C4	50	50	EC-130	PRR350	BR5015	TC39	TD-50-50	TVA-1308	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	1mfd	100V			P288N-1.0		CUB2W1	1DP-8-106	GEM-2L	2TM-M1
C6	92	NPO		† (68)	NPO-DI 100	TCZ-91	C10G2C	CCTO-101	CNO-310	10TCC-T10
C7	1000		10%		DI-1000	DD-103	SR3D1	CCD-102	GP310	10TS-D10
C8	820			Note 1	DI-820	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C9	820				DI-820	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C10	1mfd	100V			P288N-1.0		CUB2W1	1DP-8-106	GEM-2L	2TM-M1
C11	820				DI-820	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C12	820				DI-820	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C13	820				DI-820	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C14	820				DI-820	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C15	820				DI-820	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C16	820				DI-820	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C17	560		5%				5R5T56	CM-19B-561J	MCJ347	M8-356
C18	820				DI-820	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C19	5000				BPD-005	DD-503	BYA10D5	CCD-503	B-260	5HK-D60
C20	820				DI-820	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C21	5000				BPD-005	DD-503	BYA10D5	CCD-503	B-260	5HK-D60
C22	.22	400V			P488N-22		CUB4P23	4DP-5-224	GEM-4022	4TM-P22
C23	.022	600V	10%		V84C6822-10%		PM6S22	6DP-2-223	GEM-1612	6TM-S22
C24	.047	1000V			P1088N-047		CUB1S47	1EDP-4-473	GEM-1047	1TM-S47
C25	.1	600V	10%		V84C6P1-10%		PM6P1	6DP-4-104	GEM-1001	6TM-P10
C26	1000	2000V			HVD-30-1000	DD30-102	HVB30D1	3CCD-102	2HV-310	B1-D10
C27	50	NPO	5%				1T2-50	C10G1C	CNO-480	10TCC-Q50
C28	4.7		10%		NPO-SI 4.7	TCZ-4R7	C10Y47C	CCTO-4R7	CNO-547	10TCC-Y47
C29	1000		10%		DI-1000	DD-102	SR3D1	CCD-102	GP310	10TS-D10
C30	100		10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C31	4700				BPD-0047	DD-472	BYA10D47M	CCD-473	B-347	5HK-D47
C32	500				BPD-0018	DD-153	BYA10D15	CCD-153	B-215	5HK-D15
C33	820				DI-820	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C34	.047	200V			P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C35	5000				BPD-005	DD-503	BYA10B5	CCD-503	B-110	5HK-B50
C36	10000				BPD-01	DD-103	BYA10B1	CCD-103	B-110	5HK-B10
C37	10000				DAC-3T	DDE-103	HVE15B1	15DP-3-103	UAC-110	BL-B10
C38	10000	1400V			BPD-01	DD-103	BYA10B1	CCD-103	B-110	5HK-B10
C39	10000				BPD-01	DD-103	BYA10B1	CCD-103	B-110	5HK-B10
C40	150				DI-150	DD-151	L10T15	CCD-151	B-315	10TS-T15
C41	4700				BPD-0047	DD-472	BYA10D47M	CCD-473	B-347	5HK-D47
C42	2200				BPD-0022	DD-223	BYA10D22	CCD-223	B-222	5HK-D22
C43	1000	2000V			HVD-30-1000	DD30-102	HVB30D1	3CCD-102	2HV-310	B1-D10
C44	.047	600V	10%		V84C6847-10%		PM6S47	6DP-3-473	GEM-1615	6TM-S47
C45	.1	600V	10%		V84C6P1-10%		PM6P1	6DP-4-104	GEM-1001	6TM-P10
C46	.1	600V	10%		V84C6P1-10%		PM6P1	6DP-4-104	GEM-1001	6TM-P10
C47	.047	600V	10%		V84C6847-10%		PM6S47	6DP-3-473	GEM-1615	6TM-S47
C48	.047	600V			P6S8N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C49	.01	600V			P6S8N-01	D6-103	CUB6S1	6DP-3-103	GEM-611	6TM-S10
C50	1000		10%		DI-1000	DD-102	SR3D1	CCD-102	GP310	10TS-D10
C51	1000		10%		DI-1000	DD-102	SR3D1	CCD-102	GP310	10TS-D10
C52	4700				BPD-0047	DD-472	BYA10D47M	CCD-473	B-347	5HK-B47
C53	.047	600V			P6S8N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C54	3900		10%		1484-0039		1R5D39	CM-30B-392K	MCJ462.5	M8-239
C55	680		10%		1489-00068		5R5T68	CM-19B-681K	MCJ349	M8-368
C56	680		10%		1489-00068		5R5T68	CM-19B-681K	MCJ349	M8-368
C57	4700				BPD-0047	DD-472	BYA10D47	CCD-473	B-347	5HK-B47
C58	.047	600V			P6S8N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C59	.027	1600V	10%	#PC-88C				16DP-5-303	GEM-1613	
C60	330	2000V	NPO 10%	#CC-119						
C61	330	2000V	NPO 10%	#CC-119						
C62	120	2000V	5%	#CC-118						
C63	.047	600V			P6S8N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

Note 1. May not be used in some versions. † Alternate Value # Truetone Part Number

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS - IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	VC-120	BPL-50	C47S-500K-2	B12-133 *	PP55A	Volume
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
C	Switch			Not Req.	Not Req.	SW7 *	Not Req.	Push-Pull Off-On
R2A	200K	½	VC-122	F1-33		(QJ-1531	■ (UK4203	Vert. Hold
B	1000Ω	½		R2-5				Contrast
R3	2.5meg	½	VC-78	TT-83	B47-2.5meg-B	HLC2	SU-585	Height
R4A	1500Ω	½	VC-85A	TT-511	B47-1500-S	B11-109	PTA152L	Vert. Linearity
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R5A	100K	½	VC-84	TT-40	B47-100K-S	BU-128	PTA15L	AGC
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R6A	100K	½	VC-84	TT-40	B47-100K-S	BU-128	PTA15L	Brightness
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	

† "CONCENTRIKIT" Equivalent: K-15 Kit with Base Elements and Shafts: B11-139, P17-031 (Panel) B17-168, R9-110 (Rear)

■ "GTA-LOC" Equivalent: FA35L, RU13H, OF1000, 1R437

* Factory assembled Part #PQS3-133 (SKT).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R7	10meg			
R8	3.0meg			
R9	4700Ω			
R10	1000Ω			
R11	2.2meg			
R12	39K			
R13	330Ω			
R14	470Ω			
R15	47Ω			
R16	22K			
R17	220K			
R18	150K			
R19	4700Ω			
R20	470Ω			
R21	220K			
R22	68Ω			
R23	18K *			
R24	470Ω			
R25	150Ω			
R26	6800Ω			
R27	100Ω			#1R-284
R28	7500Ω 4W	PW5-7500Ω	4G-7500Ω	#1R-287
R29	12000			
R30	47Ω			
R31	180Ω			
R32	15K			
R33	82K			
R34	390K			
R35	39K			
R36	39K			
R37	56K			
R38	8200Ω 1W			
R39	56K			
R40	47K			
R41	4.7meg			
R42	270K			
R43	100K			
R44	100K			
R45	560K			
R46	100K			
R47	560K			
R48	8200Ω			
R49	680Ω			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R50	1meg			
R51	1meg			
R52	150Ω			
R53	220Ω 2W			
R54	4.7meg			
R55	2.2meg			
R56	6800Ω			
R57	5600Ω			
R58	3300Ω			
R59	2200Ω			
R60	220K			
R61	820K			
R62	56K			
R63	2.2meg			
R64	220K			
R65	390Ω 1W			
R66	39K 1W			
R67	39K			
R68	220Ω			
R69	220Ω			
R70	3.9Ω (Cold)			#1R-284
R71	100K			
R72	100K			
R73	22K 3W	PW5-22K	3G-22K	#1R-276
R74	4.7meg			
R75	470K			
R76	7500Ω			
R77	1500Ω			
R78	56K			
R79	100K			
R80	15K			
R81	470K			
R82	100Ω			
R83	12K 4W	PW5-12K	5G-12K	#1R-275
R84	150K			
R85	470K			
R86	4700Ω			
R87	1.2Ω			
R88	270K			
R89	47K			
R90	100Ω			
R91	330Ω			

* May not be used in some versions. # Truetone Part Number

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRUETONE PART No.	REPLACEMENT DATA
K1	Vert. Integrator	4700mmf, 10000mmf, 15K, 15K	CC-120	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	1st Video IF	L-150					
L2A	2nd Video IF	L-103					
B	41.25MC Trap						
L3A	3rd Video IF	L-165	TV-128	6233	RTC-8561	T210	
B	47.25MC Trap						
L4	4th Video IF	L-152 ①					① Includes Complete Assy.
L5	RF Choke (10uh)	L-180	BC-586	4612	RTC-8522	T860	
L6	RF Choke (27uh)	L-158	TV-193	4515	RTC-8525	T863	
L7A	4.5MC Trap	L-154		1482 IFT	RTC-9056	T253	
B	1st Sound IF			"			
L8	Peaking	L-162 ②					② Wound on 4700Ω Resistor
L9	Peaking	L-163 ③					③ Wound on 10K Resistor
L10	2nd Sound IF	L-167					
L11	Quadrature	L-110A ④	TV-154 *	1481 *	RTC-8606 *	T248 *	④ Includes Cap. & Res.
L12	Fil. Choke (1.5uh)	L-164	BC-562	4604	RTC-8516	T856	*Shunt with 100K Resistor

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	Merit PART No.	Miller PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.
L13	Horiz. Stabilizer	L-186	TV-163	6210	RC110	RTC-8622	HS-5	WLC-25	T103

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ~(a)	REPLACEMENT DATA: TRUETONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L14	.230A	50Ω	1 Hy.	FC-18A	C-2996	C-2343	26C44	C-24X	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: TRUETONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V @ 1.6A	540 V CT @ 230A DC	5V ② 3A	TR-51B	P-2882	P-8356	26R47 ①	R-75BA	① Use universal mounting bracket.
	SEC. 3	SEC. 4	SEC. 5						
	6.3V ② 9A								

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	Merit PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	TR-50B		PCM-2017 ① ② ③	DY-27A ③ ③	26S14 Y-52 ①	A-140X Y-60-1 ①	
T3	Yoke (Horiz. 18.7MH)	L-177						
T4	10P (Vert. 14MH) Horiz. Output	TR-51A	HVO-152 *	EFR-172 *	tHO-304 *	FLY-137 *	D-151R *	

① Use original yoke plug; connect same as original.
② Remove yoke damping network. Use original.
③ Requires new rear cover and centering device.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

ORIGINAL TERMINAL CONNECTIONS	Merit Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
5	5	5	5	5	5 & 4
6	6	4	6	6	6
7	7	2	7	7	7
8	8	1	8	8	8
2	3	7	2	1	2
1	1	8	1	2	1

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: TRUETONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	4700Ω	3-4Ω	AT-50	A-3026	A-3877	24S48	S-41Z	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: TRUETONE PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	SPK-49	4A07	

TRUETONE MODEL 2DC3140A

FOLDER 2

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			TRUETONE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	N	3/4A 125V S/B	F-13	F-14	333.750 (N 3/4A 125V S/B)	346010	N 3/4	HN 1/2 to 3/4
M2	1 1/2" length of #28 wire							

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		TRUETONE PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M3		SR15 * †	6GD1 *			* Dual Selenium Diode, Series Connected Type
M4	1N87	SC-23 ♦		1N87	1N87	† Horiz. AFC ♦ Video Detector

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M5	Tuner	TA-60	VHF, STANDARD COIL REPLACEMENT #GG-4220A
M6	Antenna	L-148	JFD REPLACEMENT Type #TA385

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Lens	MP-191	
Knob	K-423	Channel Selector
Knob	K-404	Fine Tuning
Knob	K-402	Volume
Knob	K-424	Contrast
Knob	K-425	Vertical Hold
Dial	DS-45	Channel Indicator
Cabinet Front	MP-192	
Handle	CH-134	

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

TUNER PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6FH5	V202	Mixer-Osc.	6CG8A

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

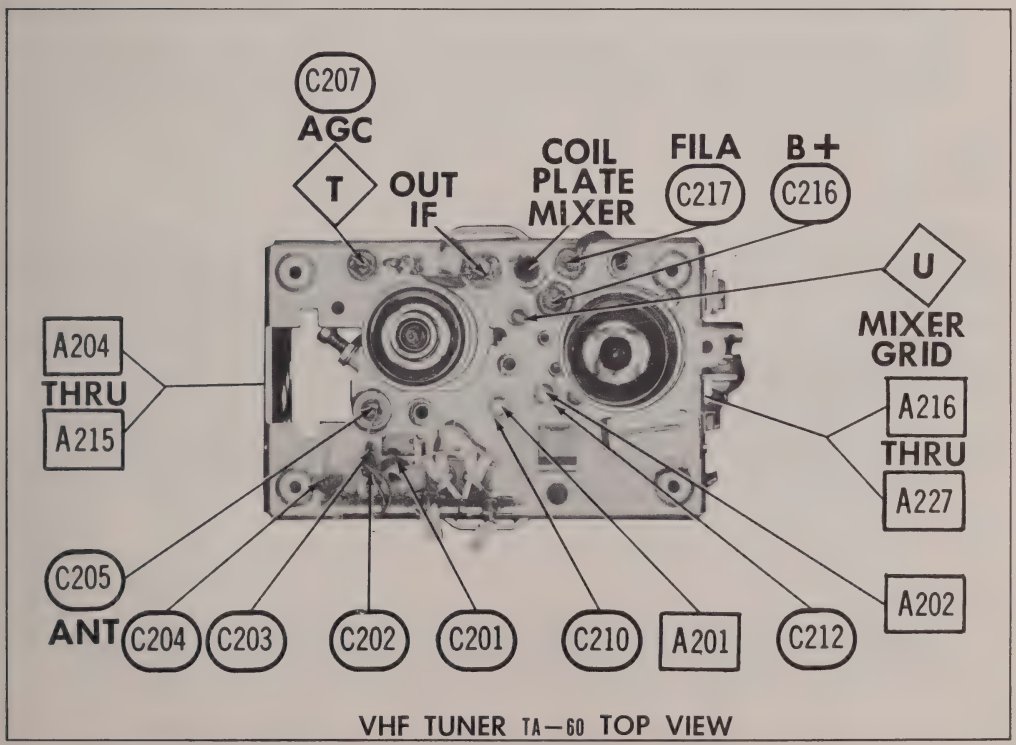
ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C202	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C203	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C204	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C205	30							
C206	28		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C207	1000		EF-001	MFT-1000		CCF-102	CT280A	
C208	1.8-7			829-7				
C209	100		EF-0001	MFT-100				
C210	.5-3			829-3		CV-1	CT565	
C211	33		NPO-DI 33	DTZ-33	C10Q33C	CCTO-33	CNO-433	10TCC-Q33
C212	.5-3			829-3		CV-1	CT565	
C213	1000		DI-1000	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C214	7.25							
C215	18 N220					*		10TCR-Q18
C216	1000		EF-001	MFT-1000		CCF-102	CT280A	
C217	1000		EF-001	MFT-1000		CCF-102	CT280A	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

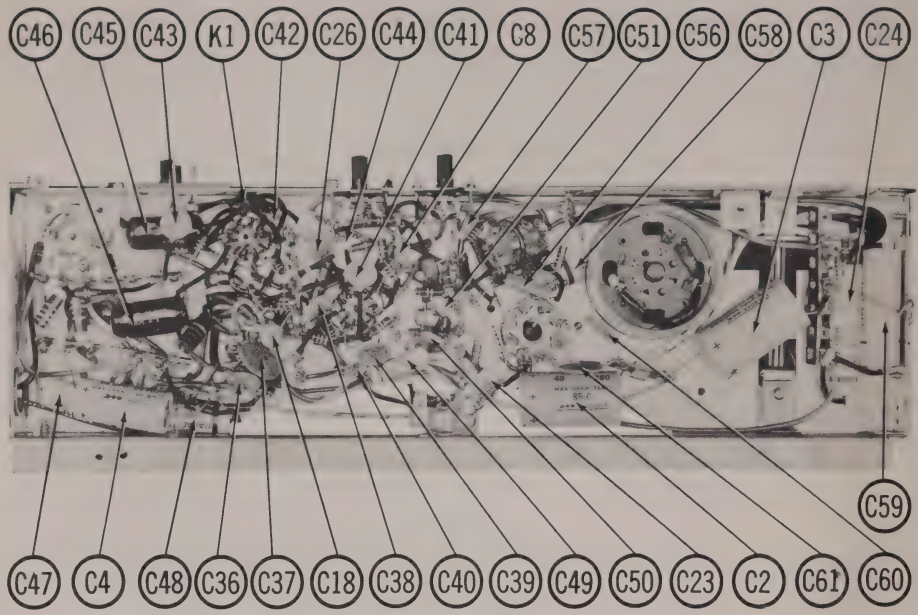
ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	47K				R205	1000Ω			
R202	1000Ω				R206	4700Ω			
R203	2700Ω				R207	4700Ω			
R204	220K								



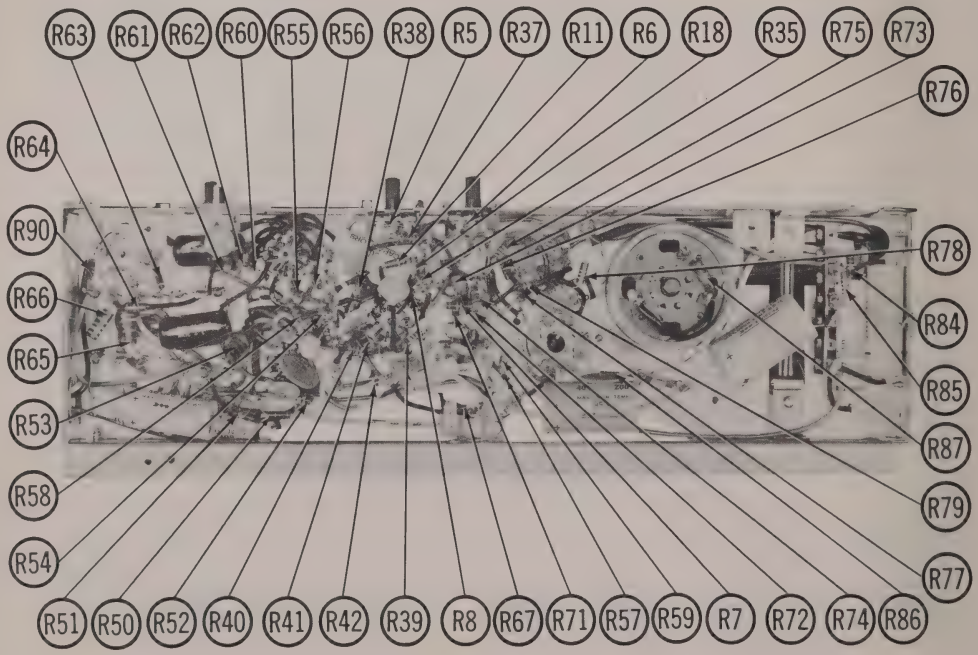
VHF TUNER TA—60 TOP VIEW

TRUETONE MODEL 2DC3140A

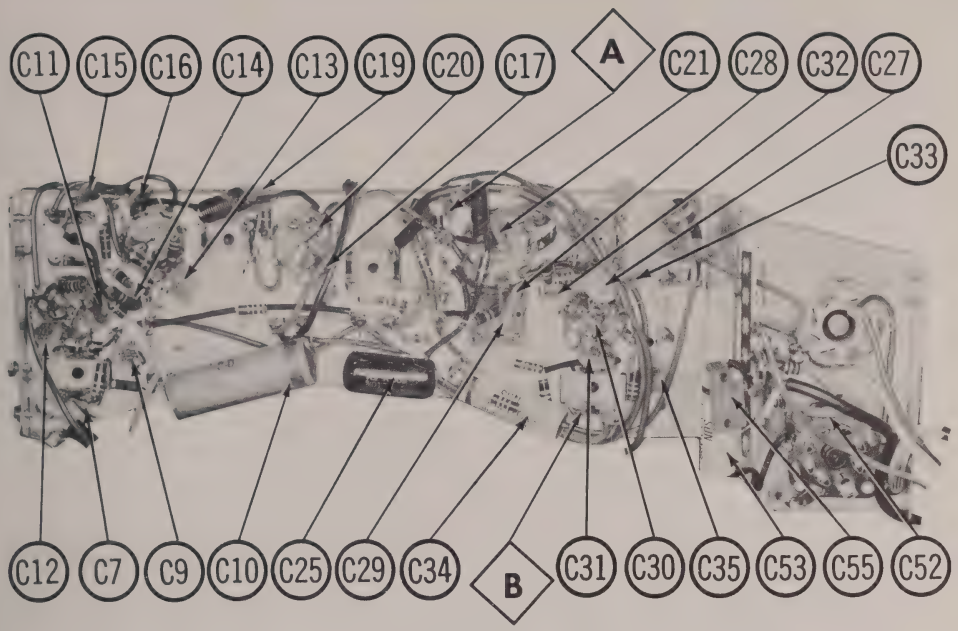
FOLDER 2



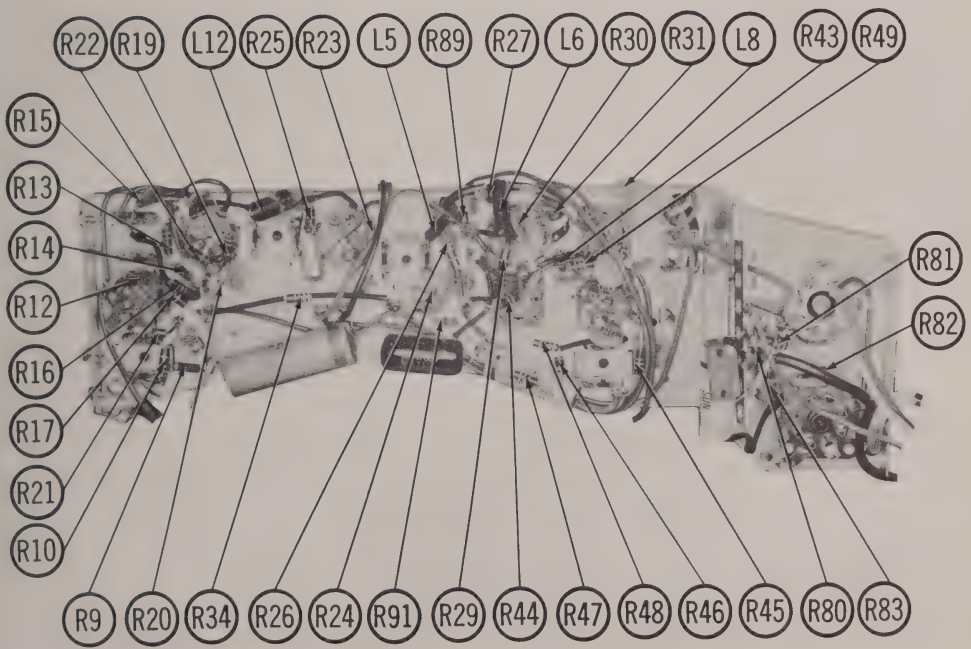
LOWER CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.



LOWER CHASSIS BOTTOM VIEW - RESISTOR IDENT.



UPPER CHASSIS BOTTOM VIEW - ALIGN. & CAPACITOR IDENT.

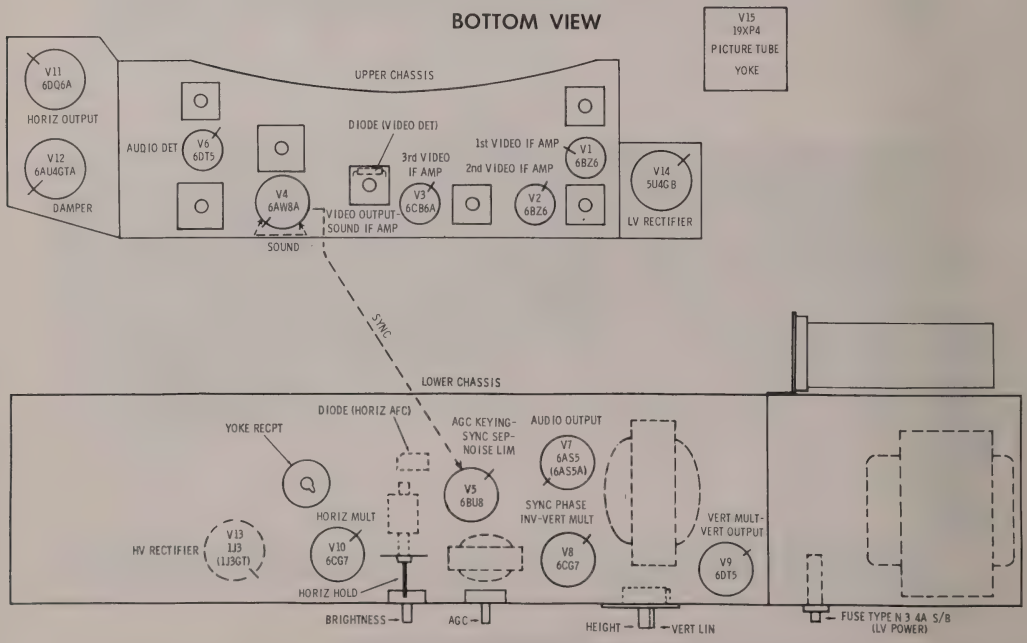


UPPER CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.

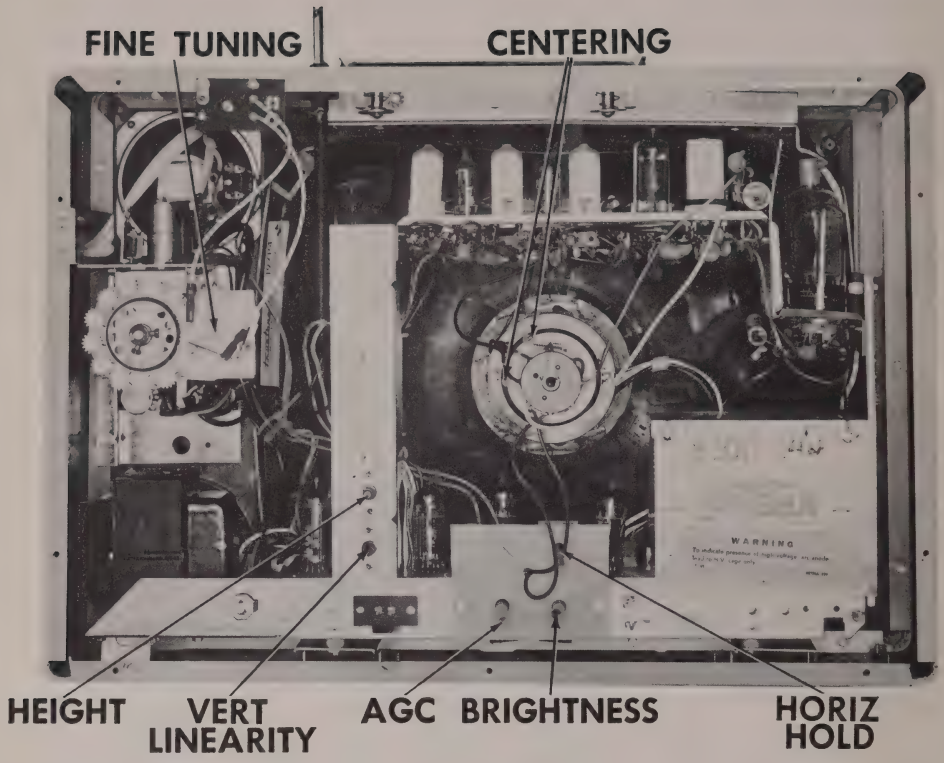
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	150K	47Ω	0Ω	.1Ω	▲540Ω	▲540Ω	0Ω		
V2	6BZ6	100K	120K	.1Ω	0Ω	†520Ω	†520Ω	▲68Ω		
V3	6CB6A	0Ω	150Ω	0Ω	.1Ω	■470Ω	■470Ω	0Ω		
V4	6AW8A	0Ω	100K	■100K	0Ω	.1Ω	● 100Ω	6900Ω	■1200Ω	†7500Ω
V5	6BU8	■0Ω	†8200Ω	1.8meg	.1Ω	0Ω	● 40K	†390K	†40K	■ 4.7meg
V6	6DT6	18Ω	680Ω	.1Ω	0Ω	†560K	■8200Ω	560K		
V7	6AS5	¶60K	520K	.1Ω	0Ω	NC	†270Ω	†550Ω		
V8	6CG7	● †1.5meg	220K	● 100K	0Ω	.1Ω	†12K	1.7meg	3300Ω	0Ω
V9	6DT5	†150Ω	NC	NC	0Ω	.1Ω	2.2meg	● 600Ω	NC	†430Ω
V10	6CG7	†7700Ω	1meg	1500Ω	0Ω	.1Ω	†100K	56K	1500Ω	0Ω
V11	6DQ6A	NC	0Ω	NC	†12K	470K	TP	.1Ω	0Ω	TOP CAP †8Ω
V12	6AU4GTA	NC	NC	620K	NC	†50Ω	NC	0Ω	.1Ω	
V13	1J3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP † 470Ω
V14	5U4GB	NC	¶40K	NC	23Ω	NC	25Ω	NC	¶40K	
V15	19XP4	.1Ω	39K	† 150K	†50Ω	NC	NC	● 120K	0Ω	
V201	6FH5	0Ω	3.2meg	0Ω	.1Ω	■1300Ω	0Ω	0Ω		
V202	6CG8A	4700Ω	■47K	0Ω	0Ω	.1Ω	■1300Ω	■330Ω	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 2 OF V14.
† MEASURED FROM PIN 3 OF V12.
NC NO CONNECTION
■ MEASURED FROM PIN 1 OF V7.
▲ MEASURED FROM PIN 2 OF V2.
TP TIE POINT



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the Brightness and Contrast Controls for a normal picture.

Turn the Horizontal Hold (Freq.) clockwise until the picture loses sync.

It may be necessary to switch off channel and back again for picture to lose sync.

Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 12 metal screws holding rear cover.
2. Remove rear cover.
3. Remove 4 push-on type knobs.
4. Remove 4 screws holding tuner and control panel assembly.
5. Remove picture tube socket, yoke plug, high voltage lead, and speaker leads.
6. Remove 10 screws holding chassis.
7. Remove chassis.

PHOTOFACT® Folder

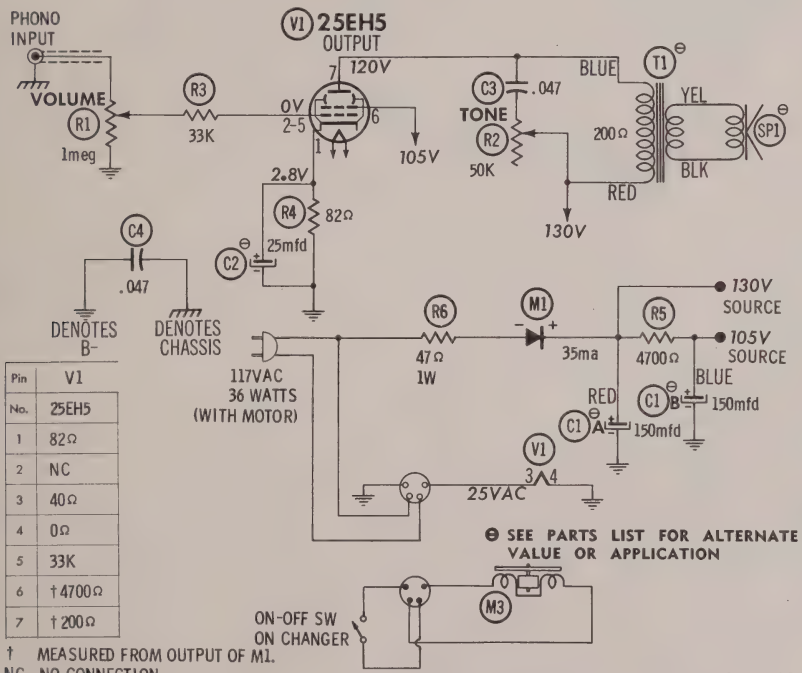
AIRLINE MODELS GEN-1012A, B, C

AIRLINE MODELS
GEN-1012A, B, C

MODEL GEN-1012B

TRADE NAME	Airline Models GEN-1012A, GEN-1012B, GEN-1012C
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago 7, Illinois
TYPE SET	AC Operated One Tube Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 36 Watts, .38 Amp. @117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE SIMILAR V-M 1201 — PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12



Pin No.	V1
1	25EH5
2	82Ω
3	NC
4	40Ω
5	0Ω
6	33K
7	†4700Ω
	†200Ω

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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SET 521 FOLDER 3

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)	ITEM No.	USE	TYPE
V1	Output	25EH5			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	80	150	E3234	PRS2230	BBRD8415	TCD4975	TDLD-11	TVA-2461	Note 1
B	40	150							Note 1
C2	25	25	E3230	PRS1260	BBR25-25	TC26	TD-25-25	TVA-1205	Note 1

Note 1. In Model GEN-1012A, C1A, B and C2 are a 3-section unit (Part #E3229).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C4	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	E2540	B-70	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	50K	½	E2541	B-31	A47-50K-S	Q11-123	U35	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS	ITEM No.	RATING	REMARKS
R3	33K		R5	4700Ω				
R4	82Ω		R6	47Ω 1W				

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2900Ω	3-4Ω	E-1126B①	A-3025②	A-3332②	26S58②	S-12Z②	① Alternate Part #E-1126. Part of SP1 in Model GEN-1012C. ②Drill New Mounting Hole (s).

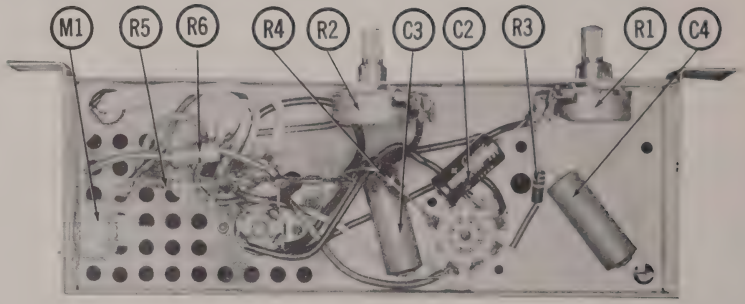
SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA AIRLINE PART No.	QUAM PART No.	NOTES
SP1	5"	PM	3-4Ω	E1047A ‡	5A1	‡ Models GEN-1012A, B
	5"	PM	3-4Ω	E1047 *		* Used in some versions of Models GEN-1012A, B
	5"	PM	3-4Ω	E1052 ♦		♦ Models GEN-1012C. Includes T1

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA AIRLINE PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.035A	E145 *	1N1763 ♦	65 *	SR200 ♦	* Selenium ♦ Silicon

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY

ITEM No.	AIRLINE PART No. CARTRIDGE	AIRLINE PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M2	60-63	CRA-55 (78 RPM)	120-TS	N8-3 * (78 RPM)	46T	Not Req.	3T-S	N3T-S *	
		CRA-55LP (LP)		N8-1 * (LP)					

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M3	Switch		Off-On-Reject (Part of Changer)
M4	Motor		Phono Drive (Part of Changer)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	E50101	Volume
Knob	E50102	Tone
Cabinet	E7065	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

AIRLINE MODELS
WG-2680A, WG-2681A

AIRLINE MODELS
WG-2680A, WG-2681A

AIRLINE MODELS
WG-2680A, WG-2681A

TRADE NAME	Airline Models WG-2680A, WG-2681A		
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago 7, Illinois		
TYPE SET	AC Operated 12 Tube FM-AM Receiver, 3 Tube Channel 2 Amplifier And 4 Speed Automatic Record Changer		
POWER SUPPLY	105 — 125 Volts AC, 60 Cycles	RATING	140 Watts, 1.25 Amp. @117 Volts AC (Radio)
TUNING RANGES—BROADCAST	535 ~ 1620KC	FREQ. MOD.	88 — 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE V-M 1201 — PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12

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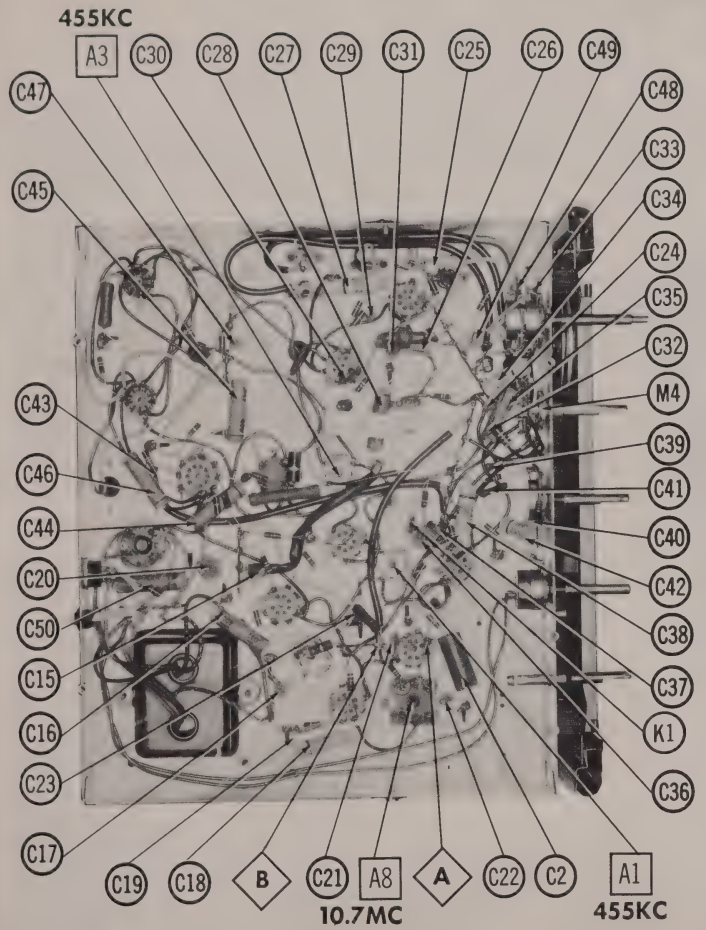
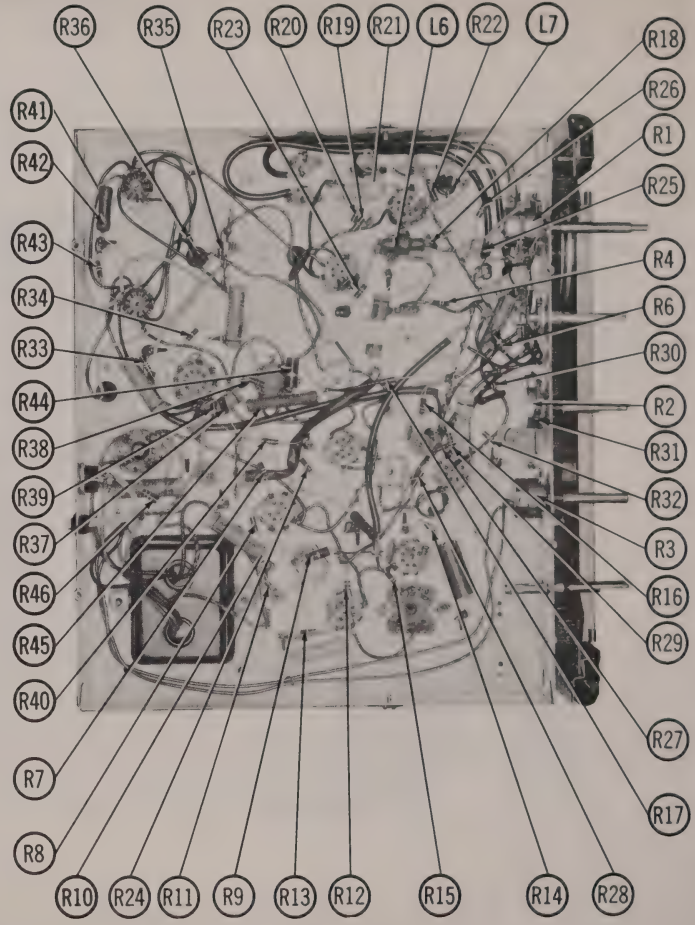
JN772R

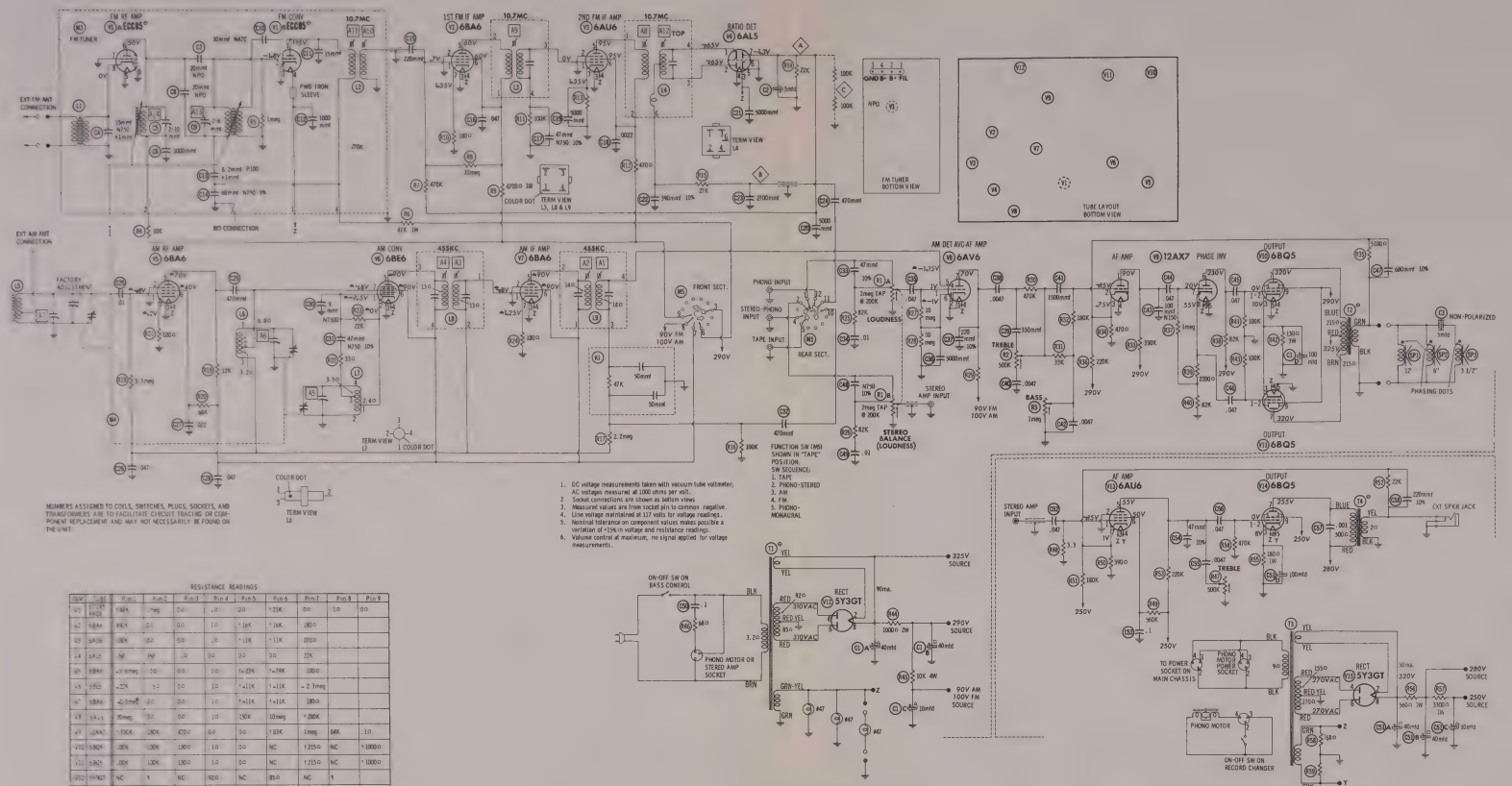
SET 521 FOLDER 4



RADIO CHASSIS-BOTTOM VIEW
ALIGNMENT, CAPACITOR & MISC. IDENT.



RADIO CHASSIS-BOTTOM VIEW
RESISTOR & INDUCTOR IDENT.



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

SW	Sec	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6EC6S	168K	2meg	0.0	1.0	2.0	*21K	6.0	1.0	0.0
V2	6BA6	190K	0.0	0.0	1.0	*.16K	*.16K	380		
V3	6AU6	30K	0.0	0.0	2.0	*.11K	*.11K	220		
V4	6AL5	.5M	1M	.1.0	0.0	0.0	0.0	22K		
V5	6BA6	+0.8meg	0.0	0.0	1.0	*+.29K	*+.29K	380		
V6	6BE6	+.25K	0.0	0.0	1.0	*+11K	*+11K	+2.1meg		
V7	6BA6	+.8meg	0.0	0.0	1.0	*+11K	*+11K	380		
V8	6A.3	10meg	0.0	0.0	1.0	150K	10meg	*.280K		
V9	6AV6	*330K	180K	470	0.0	0.0	*83K	1meg	68K	.1.0
V10	6BQ5	68K	220K	130	1.0	2.0	NC	†215Ω	NC	*1000Ω
V11	6BQ5	68K	220K	130	1.0	2.0	NC	†215Ω	NC	*1000Ω
V12	5AN8	NC	1	NC	92Ω	NC	85Ω	NC	1	
V13	5AU4	1.1meg	2Ω	38Ω	38Ω	**220K	**560K	390Ω		
V14	6BQ5	410K	410K	180Ω	38Ω	38Ω	NC	**1000Ω	NC	113800Ω
V15	5Y3GT	NC	1	NC	155Ω	NC	170Ω	NC	1	

1. THIS READING ARTICULARLY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
* MEASURED IN "AM" POSITION.
† MEASURED FROM PIN 8 OF V12.
** MEASURED FROM PIN 8 OF V15.

NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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AIRLINE MODELS
WG-2680A, WG-2681A

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:

A1 thru A4, A9...	GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989 WALSCO #2515, 2531, 2532
A5, A6, A7.....	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A8, A12.....	GENERAL CEMENT #9091, 9091-L WALSCO #2542
A10, A11.....	GENERAL CEMENT #8282, 8606, 8606-L, 9091 WALSCO #2526, 2541, 2542, 2543, 2544
A13, A14.....	GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291 WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	High side thru .1mfd to pin 1 (grid) of AM RF Amp. Low side to chassis.	1620KC	"	"	A5	"
3.	"	1400KC	Tune to 1400KC Signal.	"	A6	Set pointer to 1400KC and adjust for maximum deflection while rocking tuning gang.
4.	High side thru 50mmf to AM external antenna lead. Low side to chassis.	"	"	"	A7	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

Connect two matched 100K (±1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	Across FM antenna terminals with 120Ω in each lead.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A8, A9, A10, A11	Adjust for maximum deflection.
6.	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A12	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	Across FM Antenna terminals with 120Ω in each lead.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A8, A9, A10, A11	Disconnect stabilizing capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1. Reconnect C2.
6.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A12	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals with 120Ω in each lead.	108MC (Unmod.)	(FM) 108MC	DC probe to point Ⓐ. Common to chassis.	A13	Adjust for maximum deflection.
8.	"	98MC	98MC	"	A14	"

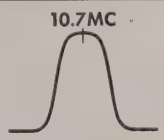


FIG. 1

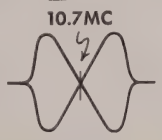


FIG. 2

RADIO PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V1	FM RF Amp. -FM Conv.	ECC85/6AQ8(6BQ7A)*
V2	1st FM IF Amp.	6BA6
V3	2nd FM IF Amp.	6AU6
V4	FM Ratio Detector	6AL5
V5	AM RF Amp.	6BA6
V6	AM Converter	6BE6
V7	AM IF Amplifier	6BA6
V8	AM Det.-AVC-AF Amp.	6AV6
V9	AF Amp.-Phase Inverter	12AX7
V10	Output	6BQ5 (EL84/6BQ5) *
V11	Output	6BQ5 (EL84/6BQ5) *
V12	Rectifier	5Y3GT

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	400	45X441	AFH4-87	D0660	FP431.7	TMQ-100	TVL-4747	
B	■40	400							
C	▲10	400							
D	100	25							
C2	5	50	45X423	PRS1310	BBR5-50	TC30	TD5-50	TVA1303	
C3	5	10NP	45X426	NP-PRS7405	BBR8-150 †	TCN105		TVAS-1110 *	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Use 2 units. Connect negative terminals together. Connect positive terminals into circuit the same as the original non-polarized unit.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	10 N750 ± 1mmf		N750-SI 10	TCN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C5	2-10	#G-E2974						
C6	1000		SI 1000	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C7	20 NPO		NPO-SI 20	TCZ-20	C10Q2C	CCTO-200	CNO-422	10TCC-Q20
C8	20 NPO		NPO-SI 20	TCZ-20	C10Q2C	CCTO-200	CNO-422	10TCC-Q20
C9	2-6	#G-E2975						
C10	10 N470 ± 1mmf	#G-E2980				*		
C11	15 NPO 10%		NPO-SI 15	TCZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C12	1000		SI 1000	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C13	8.2 P100 ± 1mmf	#G-E2978						
C14	68 N750 5%			TCN-68	C10Q68U	CCTN-680	CN7-468	C10Q68
C15	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C16	.047 400		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C17	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C18	.0022 400V		P488N-0022	D6-222	CUB6D22	6DP-1-222	GEM-6222	6TM-D22
C19	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C20	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C21	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C22	390 10%		DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C23	2700		SI 2700	DD-272	BYA10D27	CCD-272	GP227	10TS-D27
C24	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C25	.01 200V		P288N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C26	.047 200V		P288N-047	DD-503	CUB3S47	4DP-3-473	GEM-4147	2TM-S47
C27	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C28	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C29	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	10TS-T47
C30	9 N7500							
C31	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C32	470		BPD-00047	DD-471	BYA10T47	CCD-471	GP347	
C33	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C34	.01 200V		P288N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C35	.047 200V		P288N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	2TM-S47
C36	5000		BPD-005	DD-502	BYA10D5	CCD-502	GP250	5HK-D50
C37	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C38	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C39	330		SI 330	D6-331	L10T33	CCD-331	GP333	10TS-T33
C40	.0047 200V		P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C41	1500		SI 1500	D6-152	BYA10D15	CCD-152	GP215	5HK-D15
C42	.0047 200V		P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C43	100 N150					*		10TCP-T10
C44	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C45	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C46	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C47	680 10%		DI-680	DD-681	1R5T68	CCD-681	GP368	10TS-T68
C48	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C49	.01 200V		P288N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S1
C50	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
\# Airline Part Number.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg	½	36X410					Loudness
	200K Tap							
B	2meg	½						Stereo Balance (Loudness)
	200K Tap							
R2A	500K	½	40X433	B-60	A47-500K-Z	Q13-133	U48	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	1meg	½	40X434	B-70-S	A47-1meg-Z	Q13-137	U53	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	10K	
R5	1meg	
R6	47K 1W	
R7	470K	
R8	10meg	
R9	4700Ω 1W	
R10	180Ω	
R11	100K	
R12	470Ω	
R13	270Ω	
R14	22K	
R15	27K	
R16	100K	
R17	2.2meg	
R18	33meg	

ITEM No.	RATING	REMARKS
R19	12K	
R20	68K	
R21	100Ω	
R22	33Ω	
R23	22K	
R24	180Ω	
R25	82K	
R26	82K	
R27	10meg	
R28	10meg	
R29	270K	
R30	470K	
R31	33K	
R32	180K	
R33	330K	

ITEM No.	RATING	REMARKS
R34	470Ω	
R35	5100Ω	
R36	220K	
R37	1meg	
R38	82K	
R39	2200Ω	
R40	82K	
R41	100K	
R42	1300Ω 3W	
R43	100K	
R44	1000Ω 2W	
R45	10K 4W	
R46	68Ω	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AIRLINE PART No.	REPLACEMENT DATA
K1	AM Diode RF Filter	50mmf, 50mmf, 47K	76X1	Aerovox PA-99 Centralab PC-52 Cornell-Dubilier 1IITM2 Sprague D-3

RADIO PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		AIRLINE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	FM Ant. Trans.	G-EK2987				
L2	1st FM IF Trans.	G-EK2989				
L3	2nd FM IF Trans.	9A2309	FM-254	1463	RTC-8599	
L4	Ratio Detector	9A2260	FM-252	1453	RTC-9040	
L5	Loopstick	9A2437	BC-418	705-A		
L6	AM RF Coil	9A2289				
L7	AM Osc. Coil	9A2406				
L8	1st AM IF Trans.	9A2392	BC-352	12-C1	RTC-8632	
L9	2nd AM IF Trans.	9A2393	BC-353	12-C2	RTC-8633	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ .82A	620VCT @ .09A	5V @ 2A	53X365-A ①		PM-8422	22R06		① Alternate Part # 53X365
	SEC. 3	SEC. 4	SEC. 5						
	6.3V @ 4.6A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7800Ω CT	6-8Ω	51X202-A ①	A-2905	A-3880	24S42	S-57Z ②	① Alternate Part #51X202. ② Drill New Mounting Holes.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AIRLINE PART No.	QUAM PART No.	
SP1	12"	PM	6-8Ω	12A564	12A1Z7, 9	
SP2	6"	PM	24-26Ω	12A567	6A1Z25	
SP3	3½"	PM	6-8Ω	12A566	3AQ7	

PHONO CARTRIDGE & NEEDLES

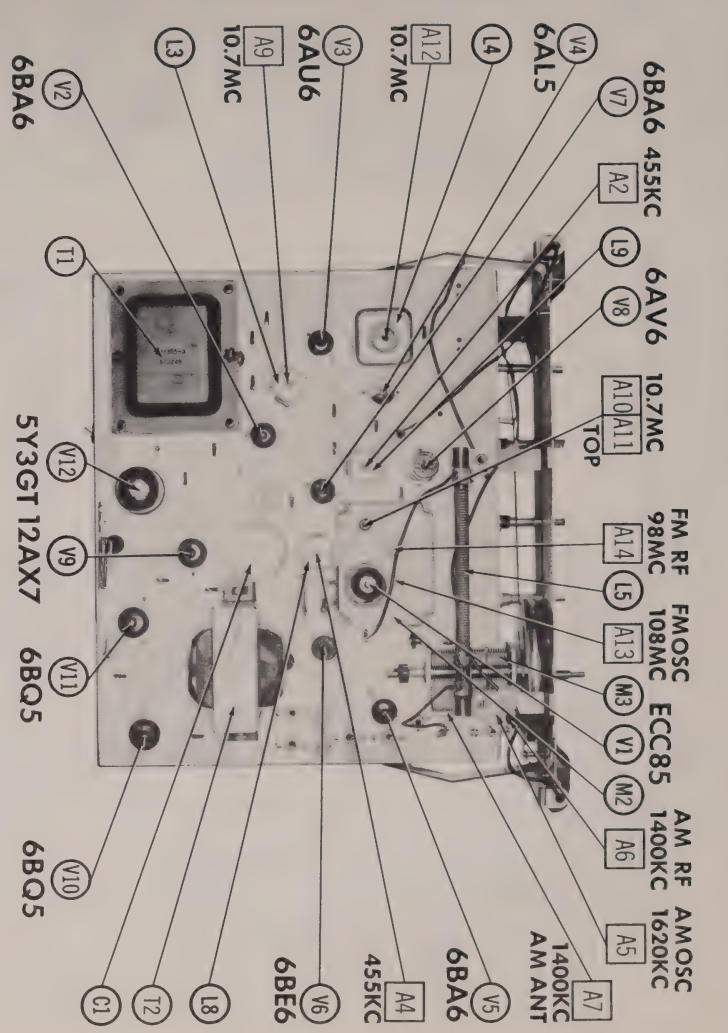
*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

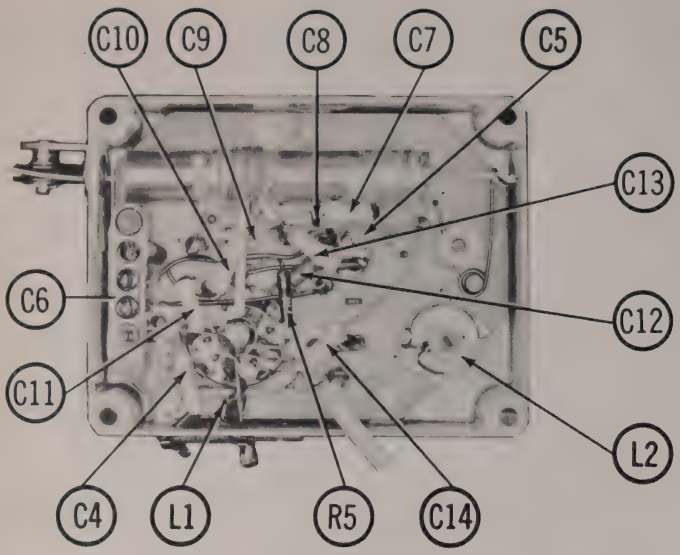
ITEM No.	REPLACEMENT DATA								NOTES
	AIRLINE PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M1	13T	Not Req.	13T	Not Req.	13	Not Req.	10T2-S	Not Req.	

MISCELLANEOUS

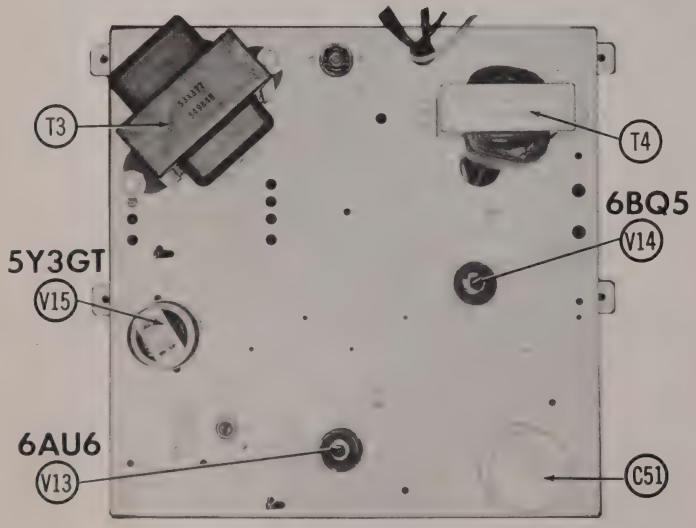
ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M2	FM Tuner	25A1163	Complete
M3	Tuning Cap.	14A234	AM, 3 Gang (Ant. 40-515mmf, RF 18-240mmf, Osc. 21-110mmf)
M4	Switch	2A501	Function Selector

CHASSIS—TOP VIEW





FM RF SUBCHASSIS



AMP CHASSIS-TOP VIEW

AMP PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE
V13 V14	AF Amp. Output	6AU6 6BQ5 (EL84/6BQ5) *

ITEM No.	USE	TYPE
V15	Rectifier	5Y3GT

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AIRLINE PART No.	AEROVOX* PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C51A	▲40	400	45X441	AFH4-87	D0660	FP431.7	TMQ-100	TVL-4747	
B	■40	400							
C	▲10	400							
D	100	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C52	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C53	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C54	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C55	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C56	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C57	.001 400V		P488N-001	D6-102	CUB6D1	6DP-1-102	GEM-421	6TM-D1
C58	220 10%		DI-220	DD-221	L10T22	CCD-221	GP221	10TS-T22

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R47A	500K	½	40X461	AB-60	B47-500K-Z	Bl3-133	U48	Treble (Stereo)
B	Shaft			AK-1	Not Req.	SK6	Not Req.	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R48	3.3meg	
R49	560K	
R50	390Ω	
R51	180K	

ITEM No.	RATING	REMARKS
R52	22K	
R53	220K	
R54	470K	
R55	180Ω 1W	

ITEM No.	RATING	REMARKS
R56	560Ω 1W	
R57	3300Ω 1W	
R58	68Ω	
R59	82Ω	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T3	117V ⓐ .42A	540VCT ⓐ .050A	5V ⓐ 2A	53X377	P-3154 ①	PC-8405	24R20U	R-12A	① Drill new mounting holes.
	SEC. 3	SEC. 4	SEC. 5						
	6.3V ⓐ 1.1A								

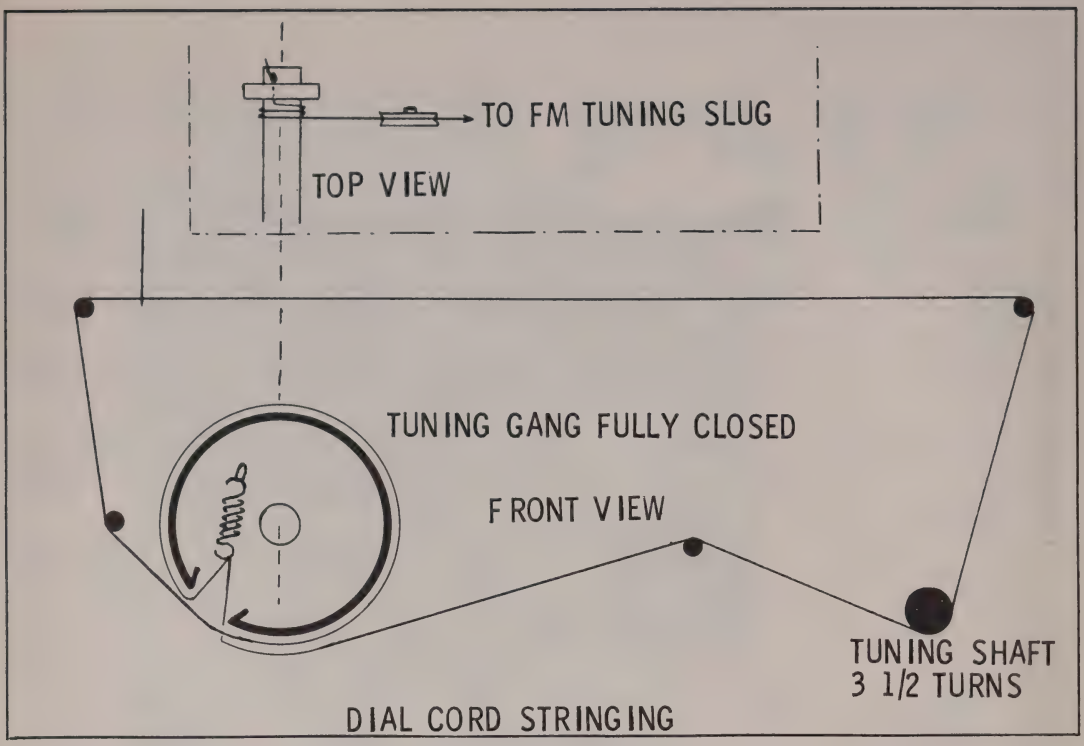
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	7600Ω	3-4Ω	51X200-A ①	A-2904 ②	A-3824	24S14	S-57Z	① Alternate Part #51X200. ② Drill new mounting holes.

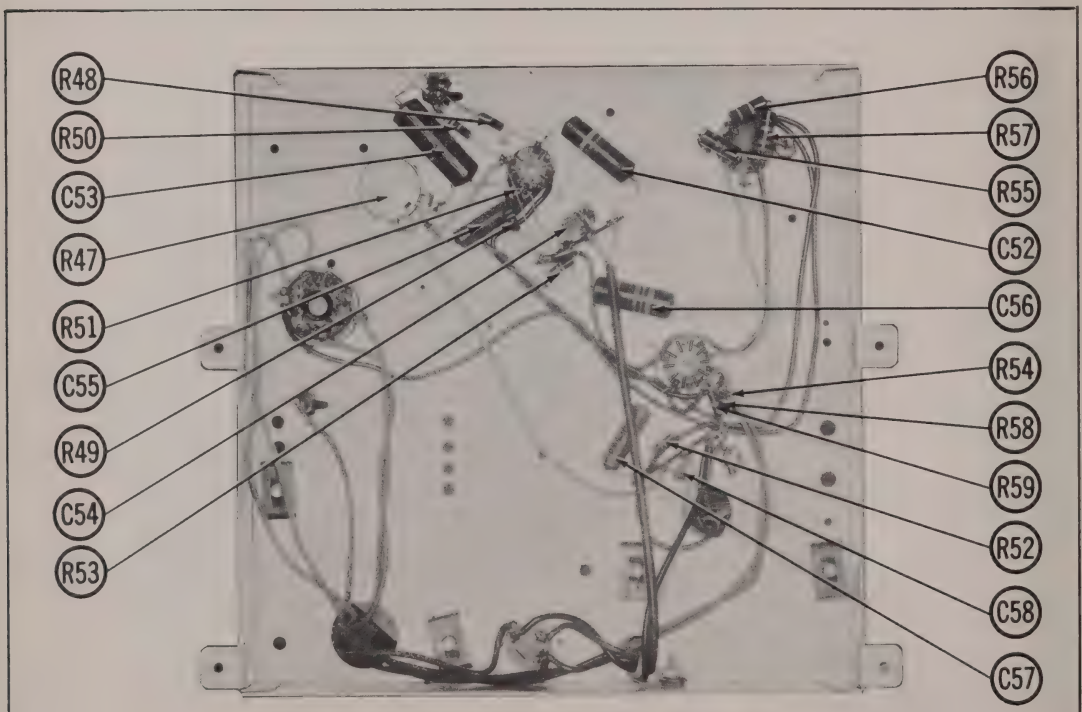
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	10A959-1	Tuning, Bass, Treble, & Function Selector
Knob	10A969	Volume, Large
Knob	10A970	Volume, Small
Dial Pointer	15X285-2	
Dial Glass	58X813	
Leg (Cabinet)	81X23-3	Mahogany
Leg (Cabinet)	81X23-4	Oak



DIAL CORD STRINGING

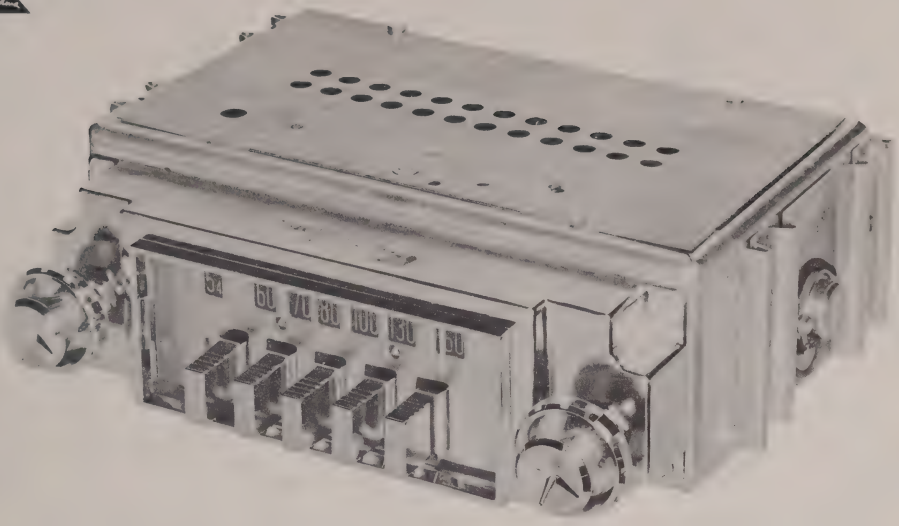


AMP CHASSIS-BOTTOM VIEW

PHOTOFACT® Folder

**AUTOMATIC
MODEL NY-400**

AUTOMATIC
MODEL NY-400



AUTOMATIC
MODEL NY-400

TRADE NAME	Automatic Model NY-400 (For 1960 Chryslers)
MANUFACTURER	Automatic Radio Mfg. Co., Inc., 122 Brookline Ave., Boston 15, Mass.
TYPE SET	Battery Operated Custom Built 4 Tube - 3 Transistor Automobile AM Receiver
POWER SUPPLY	12 Volts Storage Battery (Negative Ground) RATING 1.5 Amp. @12.6 Volts DC
TUNING RANGE—BROADCAST	538 — 1610KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 Thru A4... GENERAL CEMENT # 8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of Converter. Low side to chassis.	265KC (400∿ Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1610KC	"	"	A5	"
3.	Thru dummy (Fig. 1) to antenna receptacle.	"	"	"	A6, A7	"
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A7 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Pull Pushbutton out.
2. Tune manually to desired station.
3. Press Pushbutton in firmly.
4. Repeat for remaining Pushbuttons.

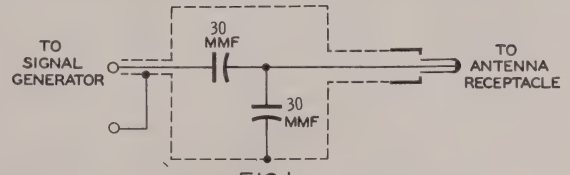


FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD359

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SET 521 FOLDER 5

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •		RAYTHEON • SYLVANIA •			
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amplifier	12BL6	V3	IF Amplifier	12BL6
V2	Converter	12AD6	V4	Det. -AVC-AF Amp.	12AE6A

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	6D122	Driver		2N362		PNP
X2	2N176 *	Output			2N176	PNP Note 1
X3	2N176 *	Output			2N176	PNP Note 1

* Alternate Type 8L201.

Note 1. When replacing, apply silicone grease (General Cement Part #8101 or equivalent) between transistor and chassis. Tighten mounting screws securely and check bias adjustment.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	AUTOMATIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	■500	15	20-322	AFH3-00-95		WP300. 85		TVLS-3026.8*	
B	▲400	15							
C	100	15							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2		#28-800L						
C3	40		NPO-DI 39	DTZ-39	C10Q39C	CCTO-390	CNO-439	10TCC-Q39
C4	5		NPO-DI 5	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C5A								
B		#28-4046						
C								
C6	100 N750		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C7	27		DI-27	DD-270	L10Q27	CCD-270	GP427	10TS-Q27
C8	3000	(10000) †	DI-3000	DD-302	BYA10D3	CCD-302	GP230	10TS-D30
C9	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C10	.0068 100V	(.01) †	P288N-0068	D6-682	CUB6D68	10P-1-682	GEM-6268	6TM-D68
C11	3000		DI-3000	DD-302	BYA10D3	CCD-302	GP230	10TS-D30

\# Automatic Part Number.
† Alternate Value.

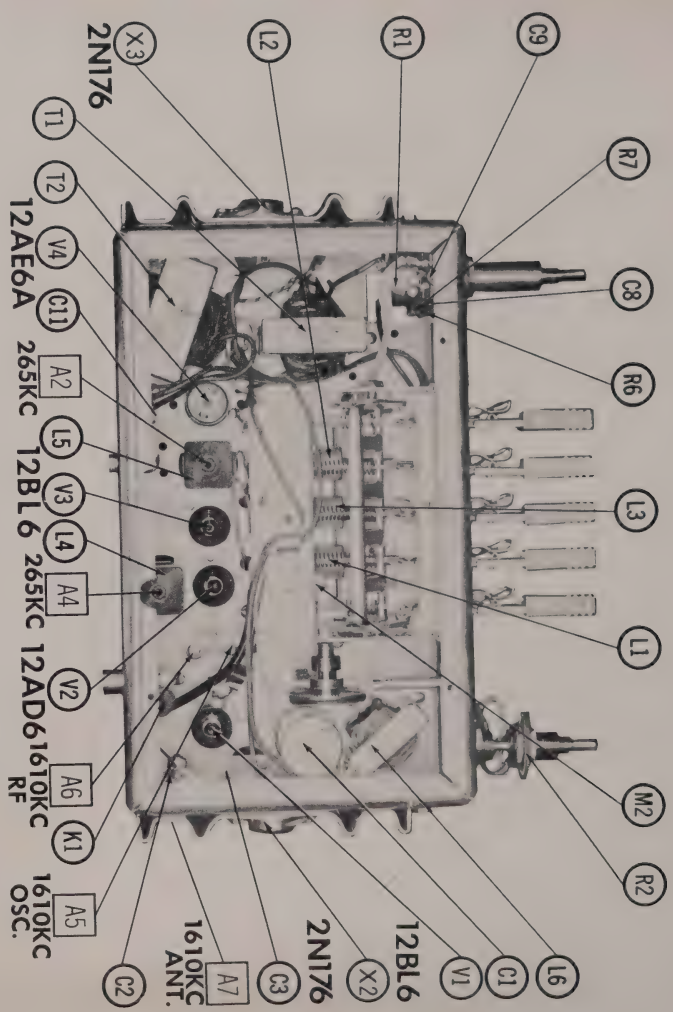
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AUTOMATIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg	½	80A1050	F1-68		† QJ-1143A	■ UE4165S	Tone
B	1meg 650K Tap			R2-60				Volume
C	Bushing			AK-28				
D	Switch			KR-7				Power Off-On Fader
R2	25Ω	2(WW)	80A1129					

† "CONCENTRIKIT" equivalent: K-8 Kit with base elements & shafts: B13-139, P14-121 (Panel); B19-137X, R1-202 (Rear); 76-2 (Switch); S24 (Bushing)

■ "STA-LOC" equivalent: FR26A, RU16T654, OS1625, LS2125, US42.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R3	47K	
R4	220Ω	
R5	1.2meg	(1meg) *
R6	220K	
R7	220K	
R8	2.2meg	

ITEM No.	RATING	REMARKS
R9	8200Ω	
R10	220Ω	
R11	10Ω	
R12	270Ω	
R13A	0.25Ω	
B	0.25Ω	

ITEM No.	RATING	REMARKS
R14	68Ω	(82Ω) *
R15	22Ω	(33Ω) *
R16	150Ω	
R17	47K	

* Alternate Value.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	AUTOMATIC PART No.	REPLACEMENT DATA
K1	Antenna Filter	100mmf, 1.2meg	89-4204 (Note 1)	Sprague PRC-9
K2	RF, Conv., IF Network	3000mmf, 5000mmf, 47000mmf, 1500Ω, 150K, 2.2meg, 4.7meg, 10meg, 10meg	89-591	Sprague DT-14

Note 1. Some version may use Individual Components in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		AUTOMATIC PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Ant.	①				① Part of M2
L2	RF	①				
L3	Osc.	①				
L4	Input IF	14-265X	BC-350	12-H1	RTC-8638	
L5	Output IF	14-267X	BC-354	12-H6	RTC-8640	

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	AUTOMATIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L6	1.5A	.9Ω	.008 HY	75A601					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AUTOMATIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	4.5	1	75A1525					

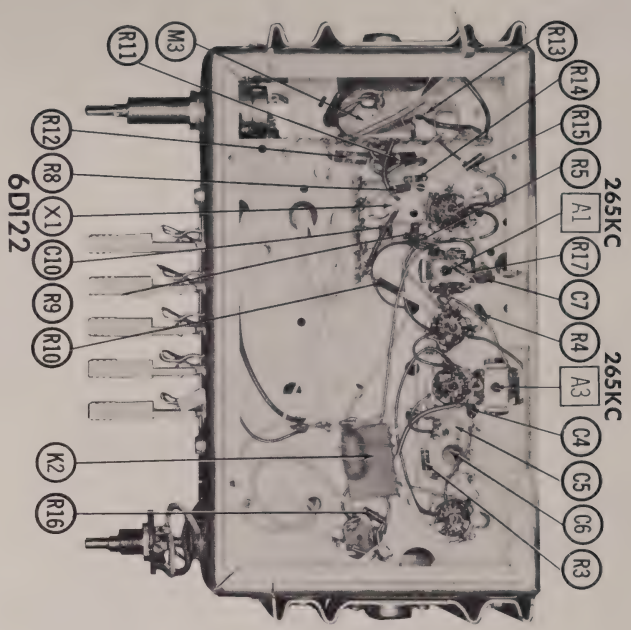
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AUTOMATIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	20Ω CT	3-4Ω Tap@ 1Ω	75A1526					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AUTOMATIC PART No.	QUAM PART No.	
SP1	6"x 9"	PM	3-4Ω	73-902	69A3	

CHASSIS—BOTTOM VIEW



FUSES

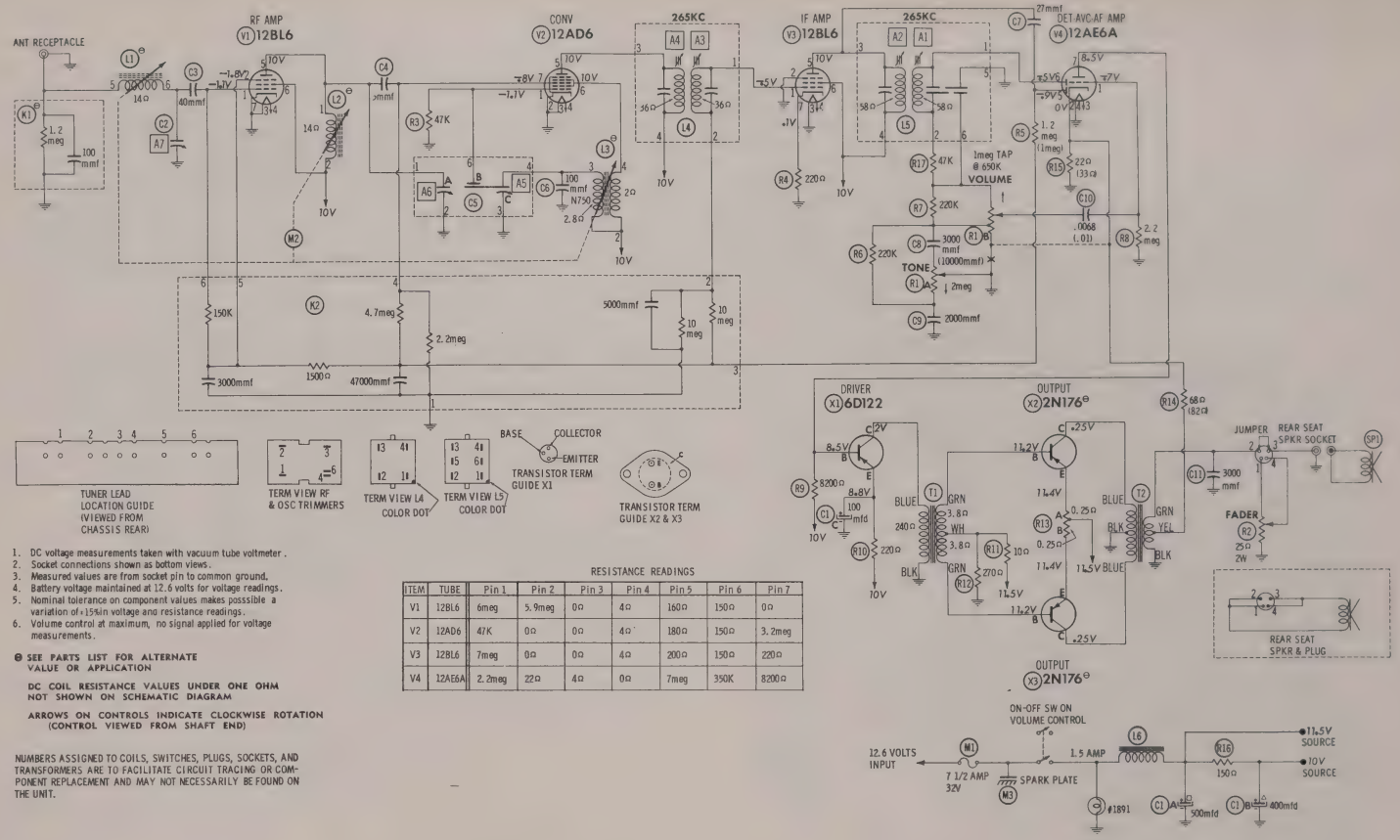
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			AUTOMATIC PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	7½A 32V	108-100		30707.5 (SFE 7½A 32V)	155009	SFE 7½	HDH

MISCELLANEOUS

ITEM No.	PART NAME	AUTOMATIC PART No.	NOTES
M2	Tuner	78B1412	
M3	Spark Plate	43-215	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BL6	6meg	5.9meg	0Ω	4Ω	160Ω	150Ω	0Ω
V2	12AD6	47K	0Ω	0Ω	4Ω	180Ω	150Ω	3.2meg
V3	12BL6	7meg	0Ω	0Ω	4Ω	200Ω	150Ω	220Ω
V4	12AE6A	2.2meg	22Ω	4Ω	0Ω	7meg	350K	8200Ω

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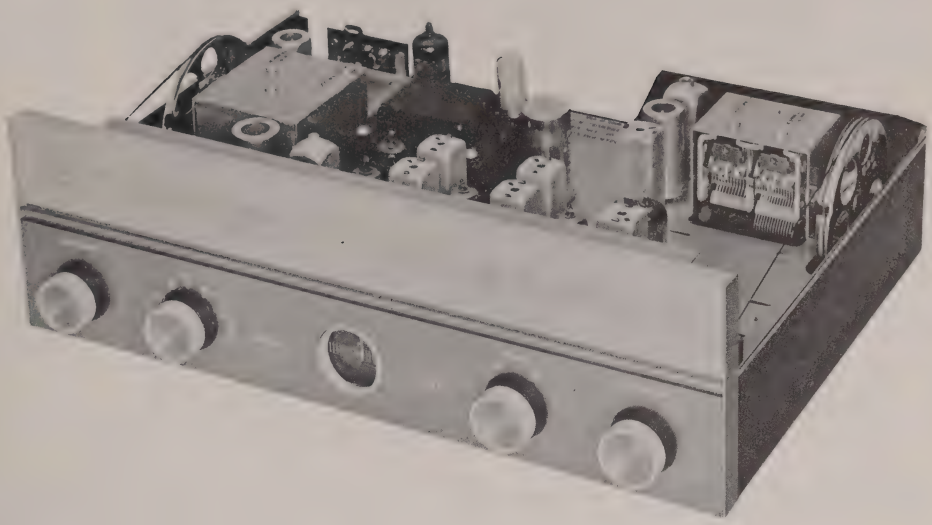
AUTOMATIC
MODEL NY-400

PHOTOFACT® Folder

**BOGEN
MODEL ST442**

BOGEN
MODEL ST442



BOGEN
MODEL ST442

TRADE NAME	Bogen Model ST442		
MANUFACTURER	Bogen-Presto Co., A Div. of the Siegler Corp., P. O. Box 500, Paramus, N. J.		
TYPE SET	AC Operated 9 Tube FM-AM Tuner		
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles	RATING	41 Watts, .4 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	520 — 1640KC	FREQ. MOD.	88 — 108MC

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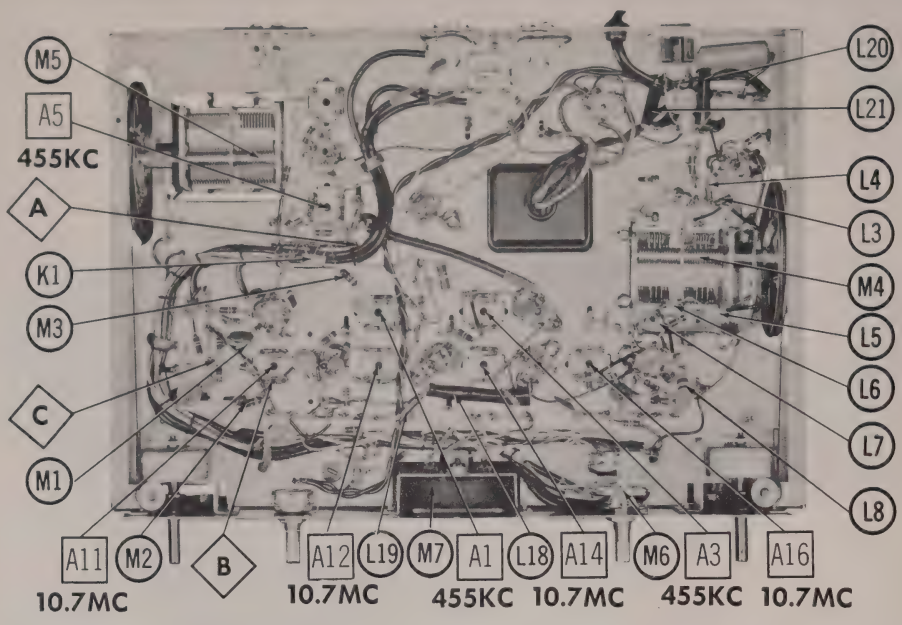
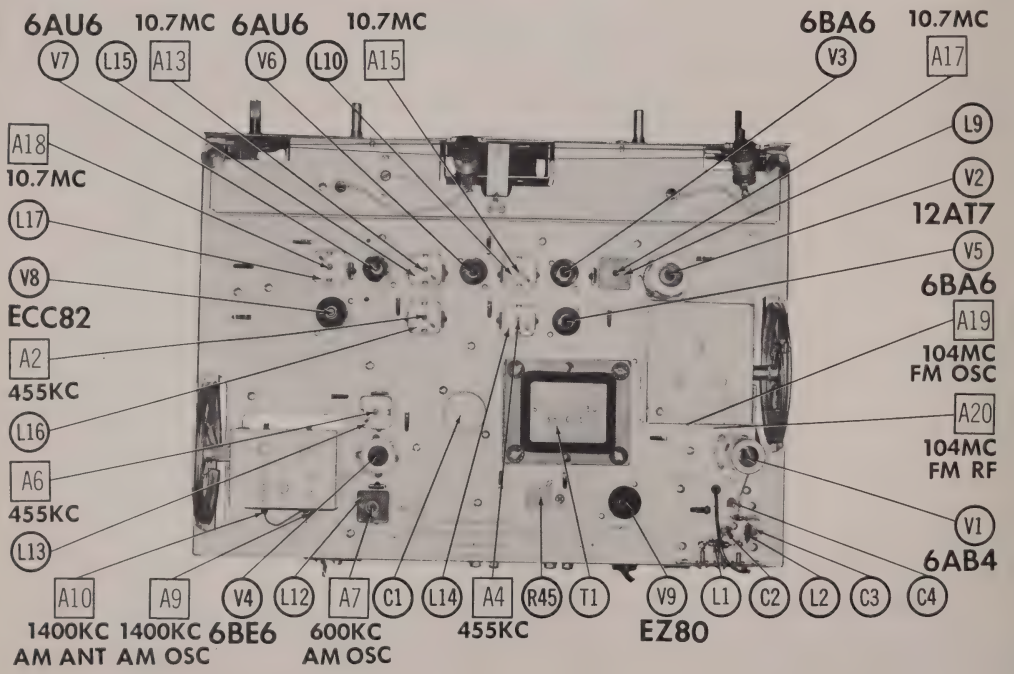


CHASSIS BOTTOM VIEW-ALIGMENT, INDUCTOR & MISC. IDENT.



CHASSIS-TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:

A1 thru A6, A11 thru A15 and A18	GENERAL CEMENT #5097, 8727 WALSCO #2515
A7	GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 WALSCO #2526, 2543, 2544, 2545
A9, A10, A20	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A16, A17	GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989 WALSCO #2515, 2531, 2532
A19	GENERAL CEMENT #8721, 8722 WALSCO #2519

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .01mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ AM Mod.)	(AM) Tuning gang fully open.	DC probe to point ⟨A⟩. Common to chassis.	A1, A2, A3, A4, A5, A6	Adjust for maximum deflection.
2.	High side thru .01mfd to AM antenna terminal. Low side to chassis.	600KC	600KC	"	A7, A8	"
3.	"	1400KC	1400KC	"	A9, A10	Adjust for maximum deflection. Repeat Steps 2 and 3.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .01mfd to pin 2 (grid) of FM Converter. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe thru 100K to point ⟨B⟩. Common to chassis.	A11, A12, A13, A14, A15, A16, A17	Adjust for maximum deflection.
5.	"	"	"	DC probe to point ⟨C⟩. Common to chassis.	A18	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru .01mfd to pin 2 (grid) of FM Converter. Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. thru 47K to point ⟨B⟩. Low side to chassis.	A11, A12, A13, A14, A15, A16, A17	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
5.	"	"	"	Vert. amp. to point ⟨C⟩. Low side to chassis.	A18	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A11 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	Across FM antenna terminals thru matching network (Fig. 3).	104MC (Unmod.)	(FM) 104MC	DC probe thru 100K to point ⟨B⟩. Common to chassis.	A19, A20	Adjust for maximum deflection.
7.	"	90MC	90MC	"	L7, L5	Adjust L7 then L5 for maximum deflection.

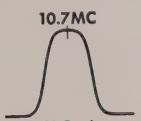


FIG. 1

FIG. 2

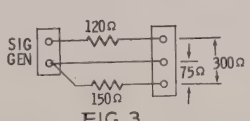
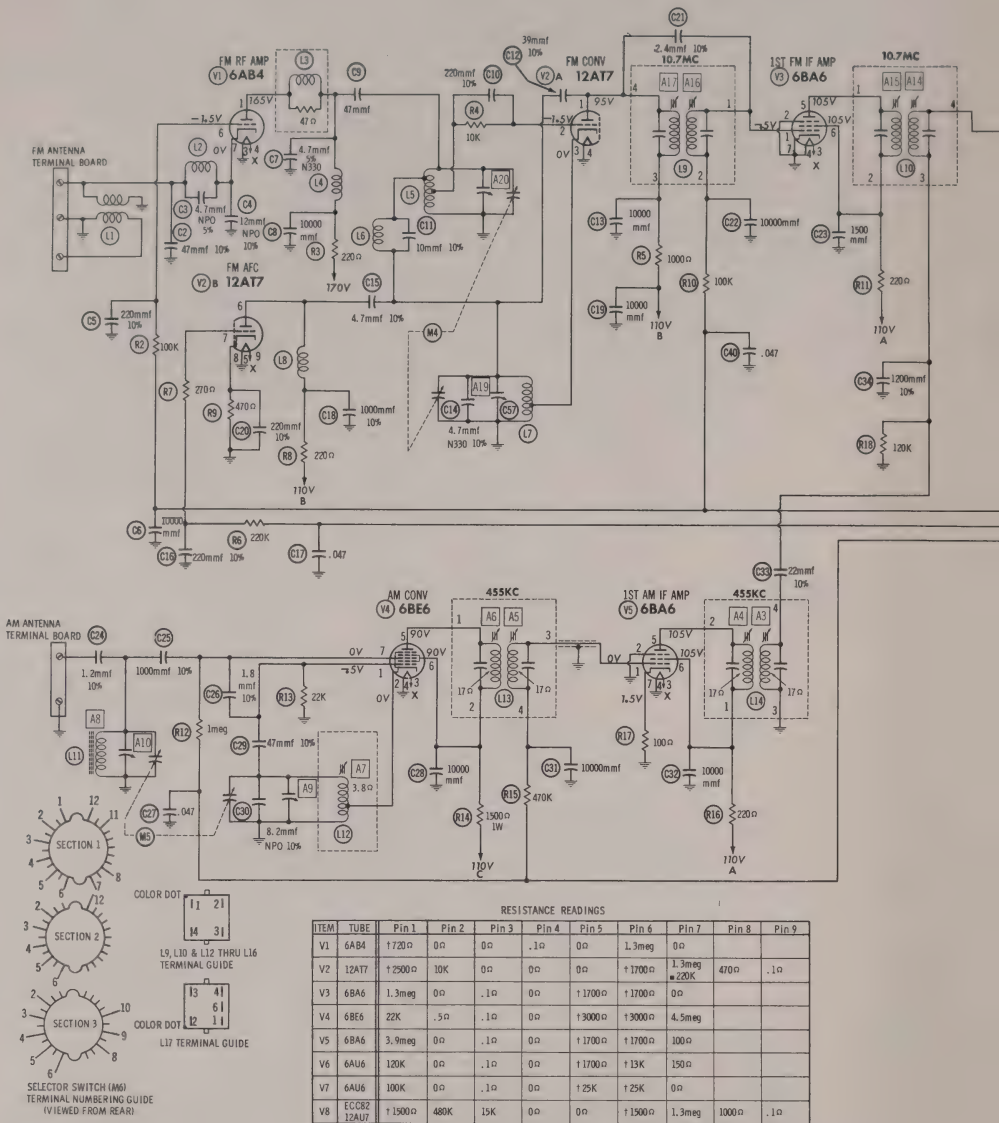


FIG. 3



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AB4	†720Ω	0Ω	0Ω	.1Ω	0Ω	1.3meg	0Ω		
V2	12AT7	†2500Ω	10K	0Ω	0Ω	0Ω	†1700Ω	1.3meg ■220K	470Ω	.1Ω
V3	6BA6	1.3meg	0Ω	.1Ω	0Ω	†1700Ω	†1700Ω	0Ω		
V4	6BE6	22K	.5Ω	.1Ω	0Ω	†3000Ω	†3000Ω	4.5meg		
V5	6BA6	3.9meg	0Ω	.1Ω	0Ω	†1700Ω	†1700Ω	100Ω		
V6	6AU6	120K	0Ω	.1Ω	0Ω	†1700Ω	†13K	150Ω		
V7	6AU6	100K	0Ω	.1Ω	0Ω	†25K	†25K	0Ω		
V8	ECC82 12AU7	†1500Ω	480K	15K	0Ω	0Ω	†1500Ω	1.3meg	1000Ω	.1Ω
V9	EZ80 6V4	150Ω	NC	¶	.1Ω	0Ω	NC	140Ω	NC	NC

ALL MEASUREMENTS MADE IN "STEREO AM-FM" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
■ MEASURED IN "AFC OFF" POSITION.
† MEASURED FROM PIN 3 OF V9.
NC NO CONNECTION

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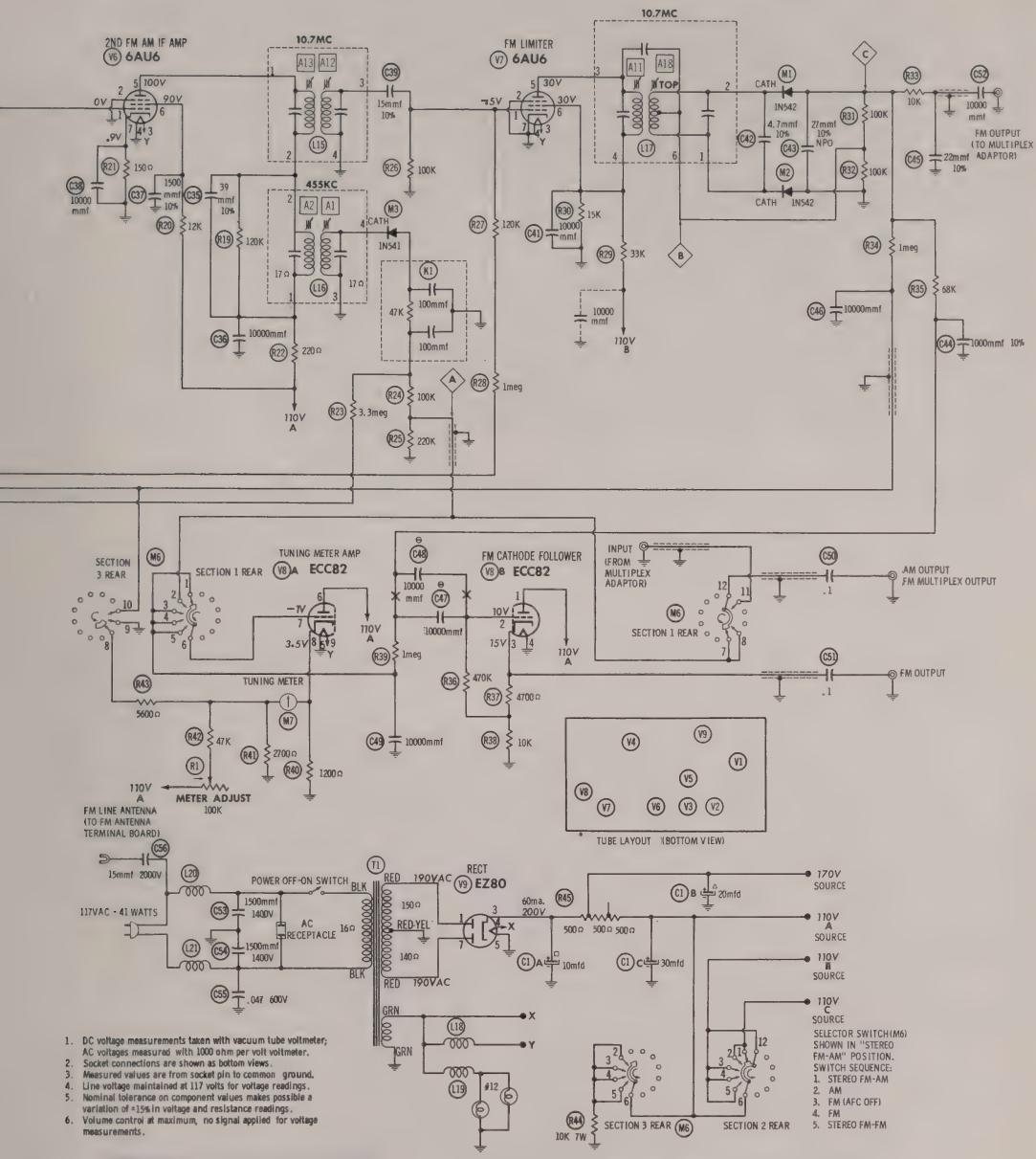


1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

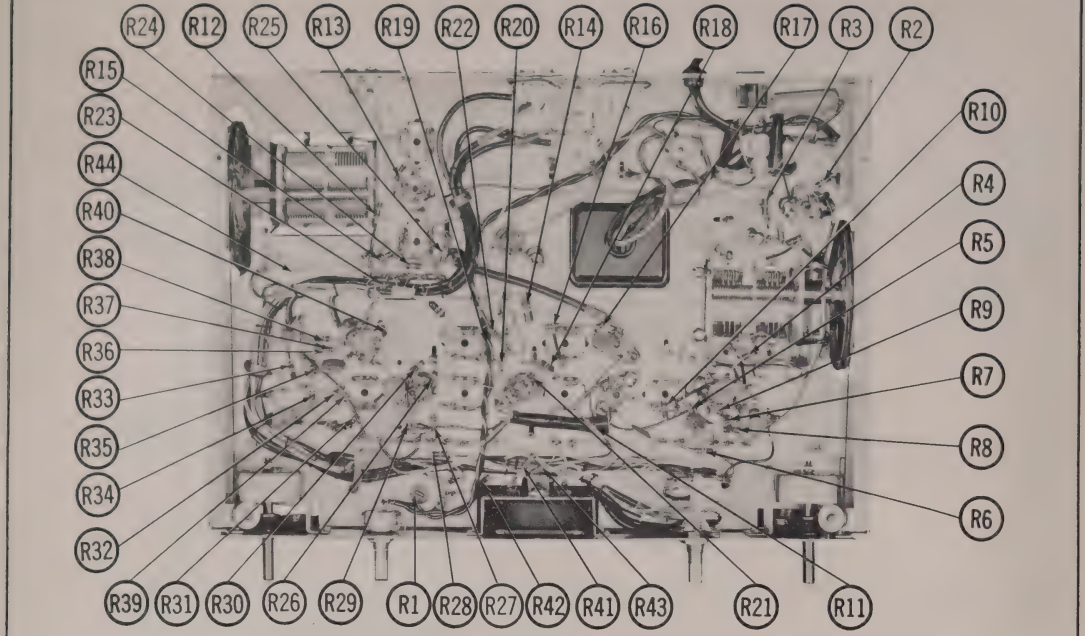
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

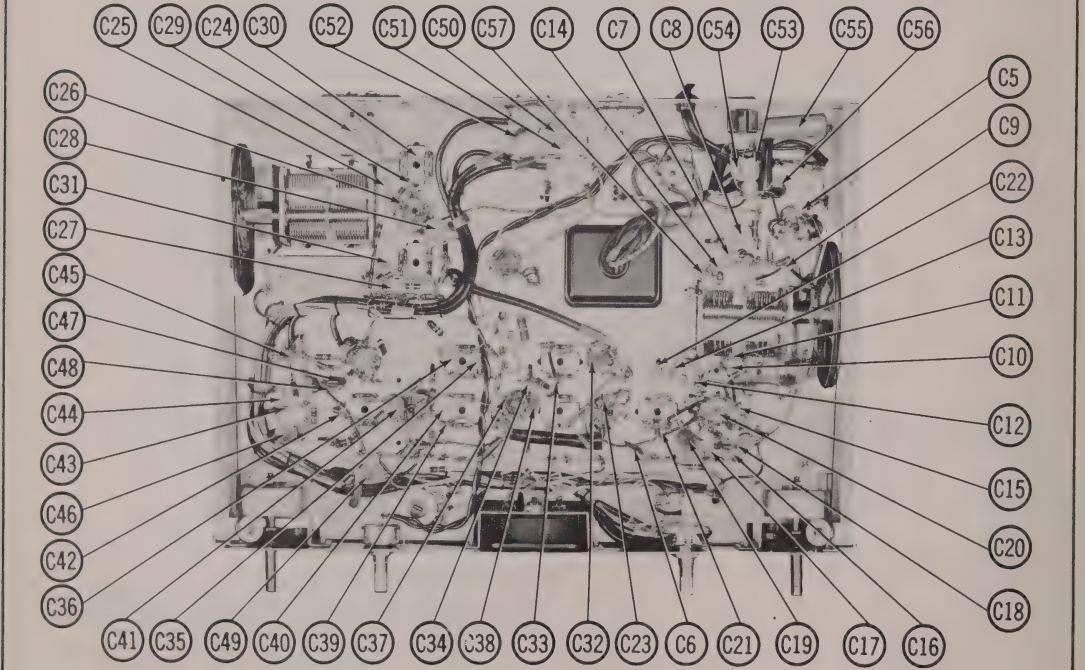
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

**BOGEN
MODEL ST442**



CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	FM RF Amplifier	6AB4
V2	FM Conv. -FM AFC	12AT7
V3	1st FM IF Amplifier	6BA6
V4	AM Converter	6BE6
V5	1st AM IF Amplifier	6BA6
V6	2nd FM-AM Amp.	6AU6
V7	FM Limiter	6AU6
V8	FM Cathode Follower-Tuning Indicator Amp.	ECC82/12AU7
V9	Rectifier	EZ80/6V4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA BOGEN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■10	250	79-010-009	AFH3-18	C0140	WP326.63	TMT-3223	TVL-3537	
B	▲20	200							
C	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	47 10%		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C3	4.7 5% NPO						CNO-547	10TCC-V47
C4	12 10% NPO			TCZ-12	C10Q12C	CCTO-120	CNO-412	10TS-Q12
C5	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C6	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C7	4.7 5% N330						*	
C8	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C9	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C10	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C11	10 10%		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C12	39 10%		DI-39	DD-390	L10Q39	CCD-390	GP439	10TS-Q39
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C14	4.7 10% N330						*	
C15	4.7 10%		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C16	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22
C17	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C18	1000 10%		DI-1000	DD-102		CCD-102	GP210	10TS-D10
C19	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C20	220 10%		DI-220	DD-220	L10T22	CCD-221	GP322	10TS-T22
C21	2.4 10%							
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C23	1500		DI-1500	DD-152	BYA10D15	CCD-152	GP215	10TS-D15
C24	1.2 10%							
C25	1000 10%		DI-1000	DD-102		CCD-102	GP210	10TS-D10
C26	1.8 10%							
C27	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C29	47 10%		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C30	8.2 10% NPO		NPO-DI 8.2		C10V82C			10TCC-V82
C31	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C32	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C33	22 10%		DI-22	DD-220	L10Q22	CCD-220	GP422	10TS-Q22
C34	1200 10%		DI-1200	DD-122		CCD-122	GP212	10TS-D12
C35	39 10%		DI-39	DD-390	L10Q39	CCD-390	GP439	10TS-Q39
C36	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C37	1500 10%		DI-1500	DD-152		CCD-152	GP215	10TS-D15
C38	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C39	15 10%		DI-15	DD-150	L10Q15	CCD-150	GP415	10TS-Q15
C40	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C41	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C42	4.7 10%		NPO-DI 4.7	DTZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C43	27 10% NPO		NPO-DI 27	TCZ-27	L10Q27	CCTO-270	CNO-427	10TCC-Q27
C44	1000 10%		DI-1000	DD-102		CCD-102	GP210	10TS-D10
C45	22 10%		DI-22	DD-220	L10Q22	CCD-220	GP422	10TS-Q22

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C46	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C47	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C48	10000	Note 1	BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C49	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C50	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C51	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C52	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C53	1500 1400V		HVD15-1500	DD30-152	HVC16D15			
C54	1500 1400V		HVD15-1500	DD30-152	HVC16D15			
C55	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C56	15 2000V		HVD30-15	DD30-150	HVA20Q15	3CCD-150		20GA-Q15
C57		#C624						

Note 1. When C47 is 20000mmf, C48 is not used.
Bogen Part Number.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BOGEN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	100K	½	77-001-392	TT-40	B47-100K-S	B11-128	PTA-15	Meter Adjust
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	100K	
R3	220Ω	
R4	10K	
R5	1000Ω	
R6	220K	
R7	270Ω	
R8	220Ω	
R9	470Ω	
R10	100K	
R11	220Ω	
R12	1meg	
R13	22K	
R14	1500Ω 1W	
R15	470K	
R16	220Ω	
R17	100Ω	

ITEM No.	RATING	REMARKS
R18	120K	
R19	120K	
R20	12K	
R21	150Ω	
R22	220Ω	
R23	3.3meg	
R24	100K	
R25	220K	
R26	100K	
R27	120K	
R28	1meg	
R29	33K	
R30	15K	
R31	100K	
R32	100K	
R33	10K	

ITEM No.	RATING	REMARKS
R34	1meg	
R35	68K	
R36	470K	
R37	4700Ω	
R38	10K	
R39	1meg	
R40	1200Ω	
R41	2700Ω	
R42	47K	
R43	5600Ω	
R44	10K 7W	IRC#PW10-10KΩ
R45A	500Ω	
B	500Ω	Pt. #R140
C	500Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA BOGEN PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	NOTES
L1	FM Ant. Trans.	95-5017-01				
L2	RF Choke (1uh)	95-5016-01	BC-561	4602	RTC-8515	
L3	RF Choke	95-5001-01①				1. Wound on 47Ω Resistor
L4	RF Choke (1.5uh)	95-5005-02	BC-562	4604	RTC-8516	
L5	FM RF Coil	95-0003-17				
L6	RF Choke (1uh)	95-5005-02	BC-562	4604	RTC-8516	
L7	FM Osc. Coil	95-0003-23				
L8	RF Choke (1uh)	95-5019-01②	BC-561	4602	RTC-8515	2. IRC Part #CLA
L9	1st FM IF Trans.	95-5021-01	FM-254	1463	RTC-8599	
L10	2nd FM IF Trans.	95-5010-01	FM-254	1463	RTC-8599	
L11	Loopstick	95-5008-01	BC-419	705-A		
L12	AM Osc. Coil	95-5009-01	BC-392	A-121-C	RTC-8760	
L13	1st AM IF Trans.	95-5013-01	BC-352	12-C1	RTC-8632	
L14	2nd AM IF Trans.	95-5013-01	BC-353	12-C2	RTC-8633	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF) (cont)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		BOGEN PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L15	3rd FM IF Trans.	95-5010-01	FM-254	1463	RTC-8599	
L16	3rd AM IF Trans.	95-5013-01	BC-353	12-C2	RTC-8633	
L17	Discriminator	95-5020-01	FM-253	1464	RTC-8665	
L18	Fil. Choke (1.7uh)	95-5015-01	BC-562	4604	RTC-8516	
L19	Fil. Choke (1.7uh)	95-5015-01	BC-562	4604	RTC-8516	
L20	Line Choke (1.7uh)	95-5015-01	BC-562	4604	RTC-8516	
L21	Line Choke (1.7uh)	95-5015-01	BC-562	4604	RTC-8516	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	BOGEN PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ .4A	380VCT @ .060A DC	6.3V @ 3.3A	83-507-030					

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	BOGEN PART No.	REPLACEMENT DATA
K1	AM Diode RF Filter	100mmf, 100mmf, 47K	78-907-001	Aerovox PA-97 Centralab PC-50 Cornell-Dubilier 111TM1 Sprague D-1

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		BOGEN PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M1	1N542	1N542		1N295	1N295	FM Det. (Pigtail)
M2	1N542	1N542		1N295	1N295	FM Det. (Pigtail)
M3	1N541	1N541		1N60	1N60	AM Det. (Pigtail)

MISCELLANEOUS

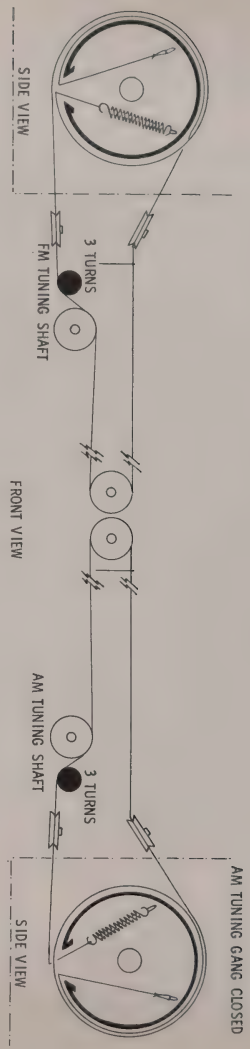
ITEM No.	PART NAME	BOGEN PART No.	NOTES
M4	Tuning Cap.	80-0119-01	FM, 2 Gang
M5	Tuning Cap.	80-0118-01	AM, 2 Gang (Ant. 36-579mmf, Osc. 21-172mmf)
M6	Switch	81-001-512	Selector (Rotary Wafer Type)
M7	Meter	94-1042-01	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

DIAL CORD STRINGING



PHOTOFACT® Folder with CIRCUITRACE®

CHANNEL MASTER MODEL 6511 (Revised)

CHANNEL MASTER
MODEL 6511 (Revised)

CHANNEL MASTER
MODEL 6511 (Revised)

TRADE NAME	Channel Master Model 6511 (Revised)
SUPPLIER	Channel Master Corp., Ellenville, N. Y.
TYPE SET	Battery Operated Transistorized AM Receiver
POWER SUPPLY	6 Volts DC RATING 10MA @ 6 Volts DC (No Signal, Min. Volume) 15MA @ 6 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	540 - 1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Suggested Alignment Tools: A4, A7. . GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

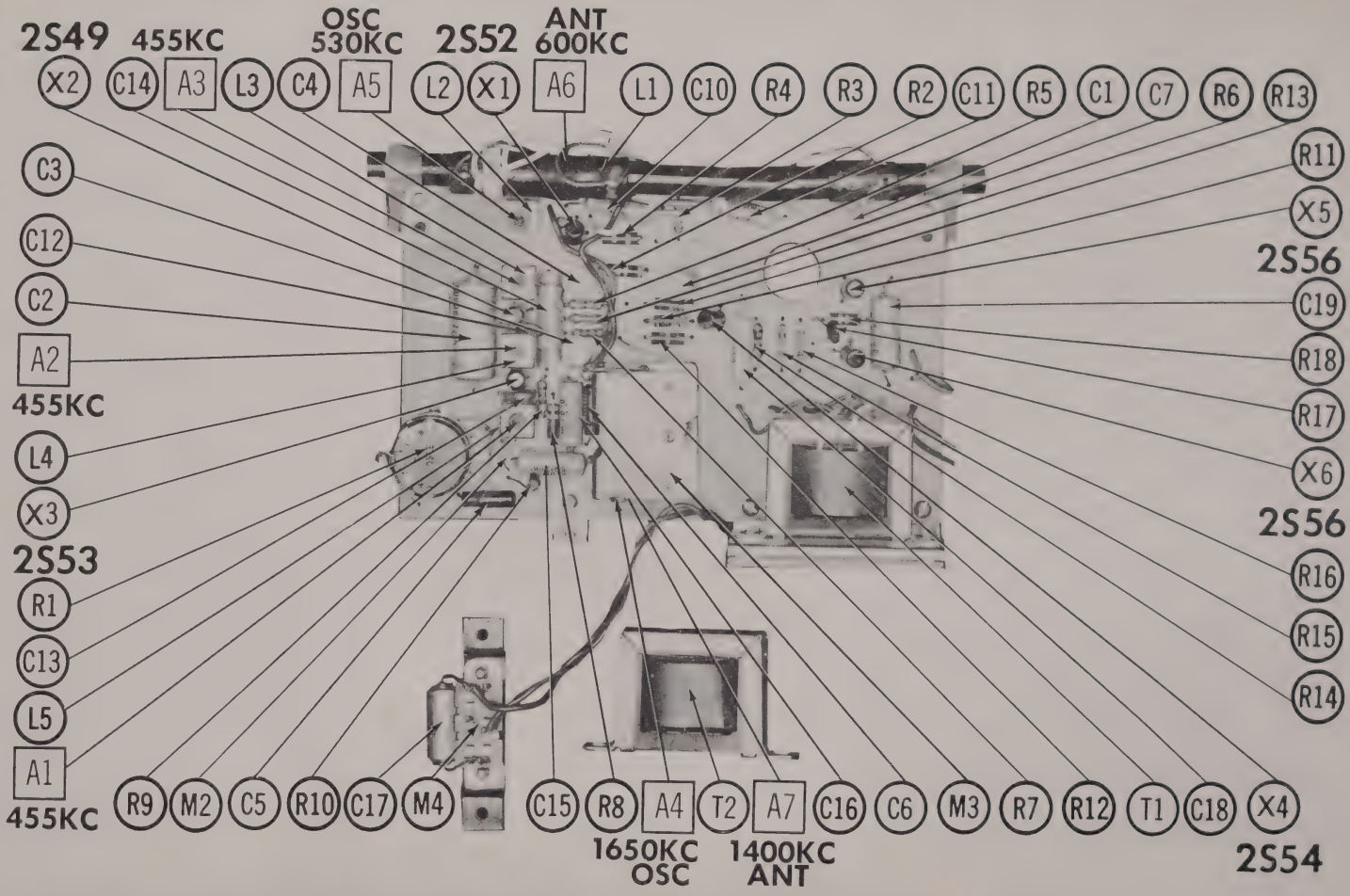
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .01mfd to antenna stator lug of tuning gang. Low side to chassis.	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	Loop	1650KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	530KC	Tuning gang fully closed.	"	A5	"
4.	"	600KC	600KC Signal.	"	A6	"
5.	"	1400KC	1400KC Signal.	"	A7	Adjust for maximum output. Repeat Steps 2 thru 5.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

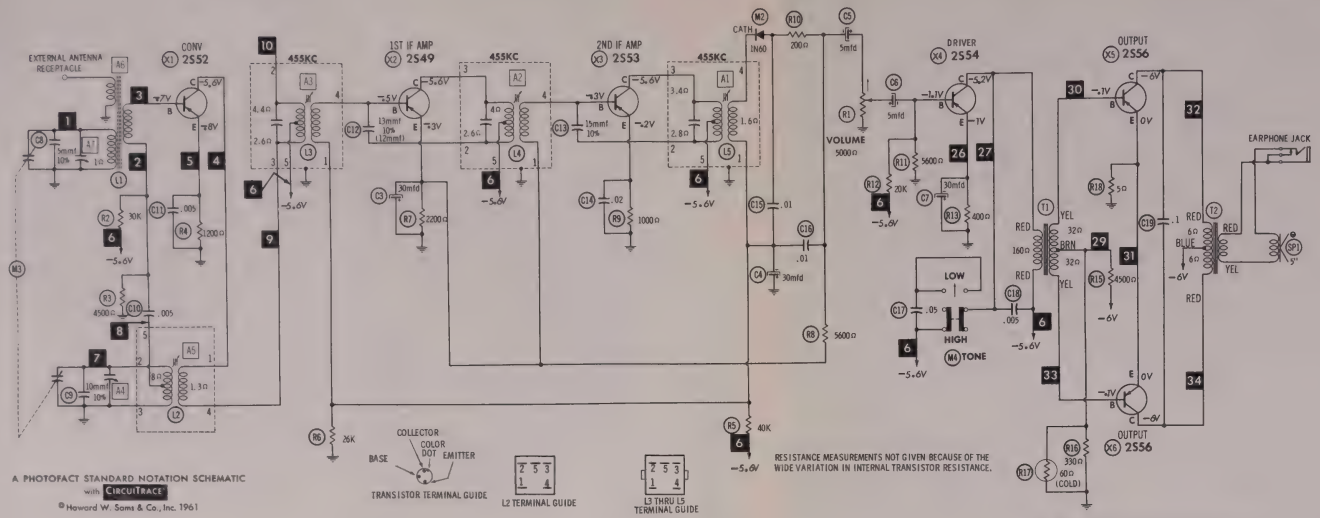
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KG260

SET 521 FOLDER 7

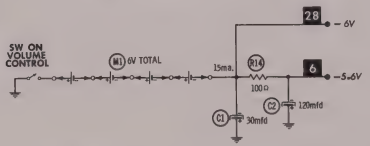


CHASSIS-TOP VIEW



DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

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PRINTED BOARD

CHANNEL MASTER
MODEL 6511 (Revised)

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2S52	Converter	2N412	2N486	2N411	PNP
X2	2S49	1st IF Amplifier	2N410			PNP
X3	2S53	2nd IF Amplifier	2N410	2S483	2N410	PNP
X4	2S54	Driver	2N408	2N362	2N408	PNP
X5	2S56	Output	2N408	2N632	2N408	PNP } Matched
X6	2S56	Output	2N408	2N632	2N408	PNP } Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	Channel Master PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	30	6	A009	BCD6035	ECPB112	TT6X30	ML30-6	VL-1092	
C2	120	10	A023	SRE12V100	NLW125-10	TT15X100	TD-100-6	TE-1136	
C3	30	6	A009	BCD6035	ECPB112	TT6X30	ML30-6	VL-1092	
C4	30	6	A009	BCD6035	ECPB112	TT6X30	ML30-6	VL-1092	
C5	5	6	A010	XPP-6005	NLW5-15	TT6X5	ML5-6	TE-1084	
C6	5	6	A010	XPP-6005	NLW5-15	TT6X5	ML5-6	TE-1084	
C7	30	6	A009	BCD6035	ECPB112	TT6X30	ML30-6	VL-1092	

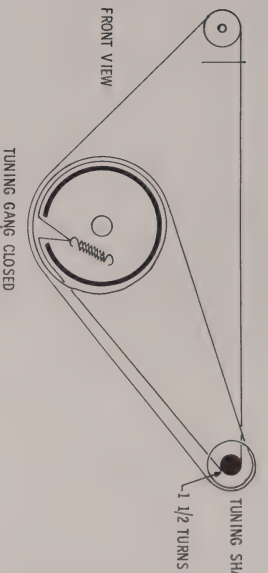
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	5 10%		DI-5	DD-050	L10V5	CCD-050	GP550	10TS-V50
C9	10 10%		DI-10	D6-100	L10Q1	CCD-100	GP410	10TS-Q10
C10	.005 150V		V84C2D47	D6-502	DPMS6D5	6DP-1-502	GEM-625	2EP-D50
C11	.005 150V		V84C2D47	D6-502	DPMS6D5	6DP-1-502	GEM-625	2EP-D50
C12	13 10%	(12) †	DI-12	DD-120	L10Q12	CCD-120	GP412	10TS-Q12
C13	15 10%		DI-15	DD-150	L10Q15	CCD-150	GP415	10TS-Q15
C14	.02 150V		V84C2S22	DD-203	DPMS2S2	6DP-2-203	GEM-412	2EP-S20
C15	.01 150V		V84C2S1	D6-103	DPMS4S1	6DP-2-103	GEM-411	2EP-S10
C16	.01 150V		V84C2S1	D6-103	DPMS4S1	6DP-2-103	GEM-411	2EP-S10
C17	.05 150V		V84C2S5	DD-503	DPMS2S5	6DP-3-503	GEM-415	2EP-S50
C18	.005 150V		V84C2D47	D6-502	DPMS6D5	6DP-1-502	GEM-625	2EP-D50
C19	.1 150V		V84C2P1	DF-104	DPMS2P1	2DP-3-104	GEM-201	2EP-P1

† Alternate Value.

TUNING DRIVE CORD STRINGING



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Channel Master PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	½	E010					Volume & Switch

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	30K	
R3	4500Ω	
R4	1200Ω	
R5	40K	
R6	26K	
R7	2200Ω	

ITEM No.	RATING	REMARKS
R8	5600Ω	
R9	1000Ω	
R10	200Ω	
R11	5600Ω	
R12	20K	
R13	400Ω	

ITEM No.	RATING	REMARKS
R14	100Ω	
R15	4500Ω	
R16	330Ω	
R17	60Ω Cold	Pt. #F150
R18	5Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		Channel Master PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Loopstick	E011				
L2	Osc. Coil	F158				
L3	1st IF Trans.	C010				
L4	2nd IF Trans.	C011				
L5	3rd IF Trans.	C007				

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Channel Master PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.3	1	C012					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Channel Master PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	240Ω CT	3-4Ω	C013					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Channel Master PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	S-12GA *	5A15	* Alternate Part #G093

BATTERIES

ITEM No.	VOLTAGE	Channel Master PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			930 *		1015 *		M-15R*	* 4 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		Channel Master PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N60	F149			1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	Channel Master PART No.	NOTES
M3	Tuning Cap.	A016	2 Gang
M4	Switch	E012	Tone (DPDT Slide Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

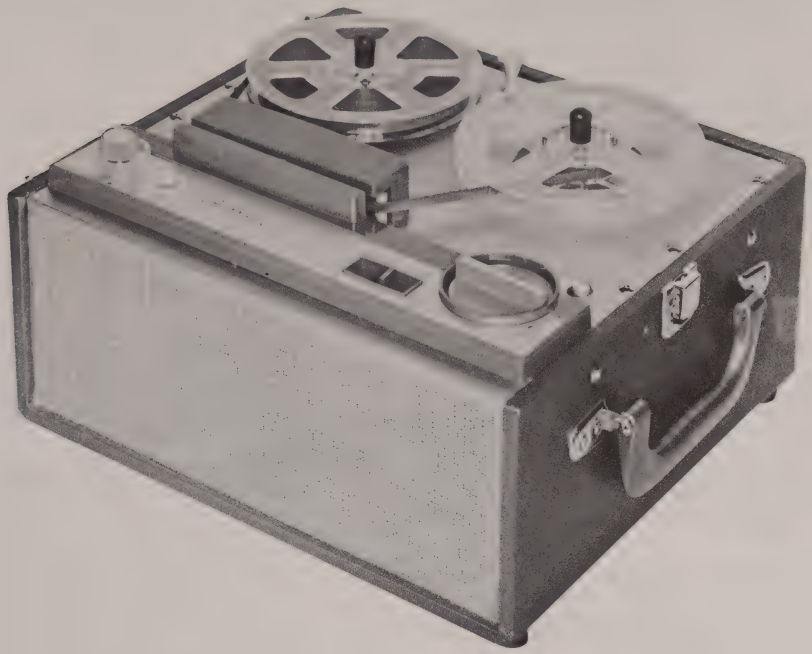
NAME	PART NO.	DESCRIPTION
Knob	F012	Tuning, Dial Assembly
Knob	F013	Volume
Cabinet	G007	Green

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

PHOTOFACT® Folder with CIRCUITRACE®

GEMARK
MODEL 101



GEMARK
MODEL 101

GEMARK
MODEL 101

GENERAL INFORMATION

The Gemark Model 101 tape recorder is a two-speed tape recorder designed to play and record two tracks of material on standard-width recording tape.

Recordings may be made from a phonograph, radio, or television receiver as well as those made from the microphone.

The two tape speeds are 7 1/2 and 3 3/4 ips. Using both tracks, the recording and playing times are as follows:

Reel Size	3 3/4" Speed	7 1/2" Speed
5" (600 ft.)	1 hour	1/2 hour

This recorder is designed to operate on 60 cycles, 110-120 volts, AC supply only.

Manufactured By:

General Magnetics & Electronics, Inc.
134-09 36th Road
Flushing 54, New York

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

CQ459

SET 521 FOLDER 8

FUNCTION OF CONTROLS

On-Off Volume

Turn this control clockwise to turn the power on to the unit. Further rotation increases the volume on playback and the recording level on record.

Function

This control selects the different modes of operation. Turning this control clockwise from the Stop position places the unit in the Playback mode. To place the unit in the Record mode, depress the Function control and turn it clockwise until it locks into position.

Wind-Rewind

Move this control to the right to wind the tape onto the takeup reel and to the left to rewind the tape onto the supply reel. Before operating this control, make sure the Function control is in the Stop position.

Speed Change

To change the recorder speed to 3 3/4 ips, pull up on the control. Pushing down on the control changes the speed to 7 1/2 ips.

NOTE: This control should be operated only when the recorder is turned on.

OPERATING INSTRUCTIONS

Threading the Tape

1. Place a reel of tape on supply reel spindle (18).
2. Place an empty reel on takeup reel spindle (3).
3. Unwind about 12" of tape from the reel. Hold a section taut and insert it into the tape slot. Make sure the dull-coated side faces the rear of the recorder.
4. Insert the free end of the tape into one of the radial slots in the hub of the takeup reel. Turn the reel several turns counterclockwise to secure the tape to the reel and to take up all slack between reels.

To Record from Microphone

1. Turn the unit on and allow sufficient time for the tubes to warm up.
2. Insert the microphone into the microphone jack.
3. Set the Speed Selector for the desired recording speed.
4. Move the Function Control to the Record position.
5. Place the microphone about 6 to 12 inches from the signal source.
6. Adjust the Volume control until the record level indicator flashes on the loudest peaks.

NOTE: Correct volume level when recording is very important. Too weak a signal will result in weak playback and high background noise. Too strong a signal will result in distortion during playback.

To Record from a Radio

To record from a radio, one of the following methods may be used:

1. Microphone Pickup from Radio Speaker. — Place the microphone about 6 to 12 inches in front of the radio speaker. Turn the radio volume control to a normal level. Turn the radio tone control to treble or high. Set the recording level and record as under "To Record from a Microphone".
2. Direct Connection to Radio Speaker. — Make a shielded cable with a two-conductor phono plug on one end and two alligator clips on the other end. Connect the alligator clips across the voice coil terminals of the radio speaker and insert the plug into the microphone jack. Set the radio volume and tone controls as described in Step 1. Set the recording level and proceed as described under "To Record from a Microphone".
3. Direct Connection to Volume Control of Radio. — Make a shielded cable with a phono plug on one end. Connect the other end across the radio volume control. Insert the phono plug in the microphone jack. Set the recording level and record as described under "To Record from a Microphone". The setting of the radio volume and tone controls will have no effect on this setup.

To Record from Phonograph

A phono plug is required on the pickup leads of the phonograph. Insert it into the microphone jack and proceed as described under "To Record from a Microphone".

To Record from a Television Receiver

Use one of the methods described under "Recording from a Radio".

Dual Track Recording

This recorder is designed to record and play on one-half the width of the tape at a time; thereby, resulting in two-track recording. After the first recording is completed, remove the full reel from the takeup reel spindle (3), turn the reel over and place it on the supply reel spindle (18). The second track can now be recorded. The tape can be played back in the same manner.

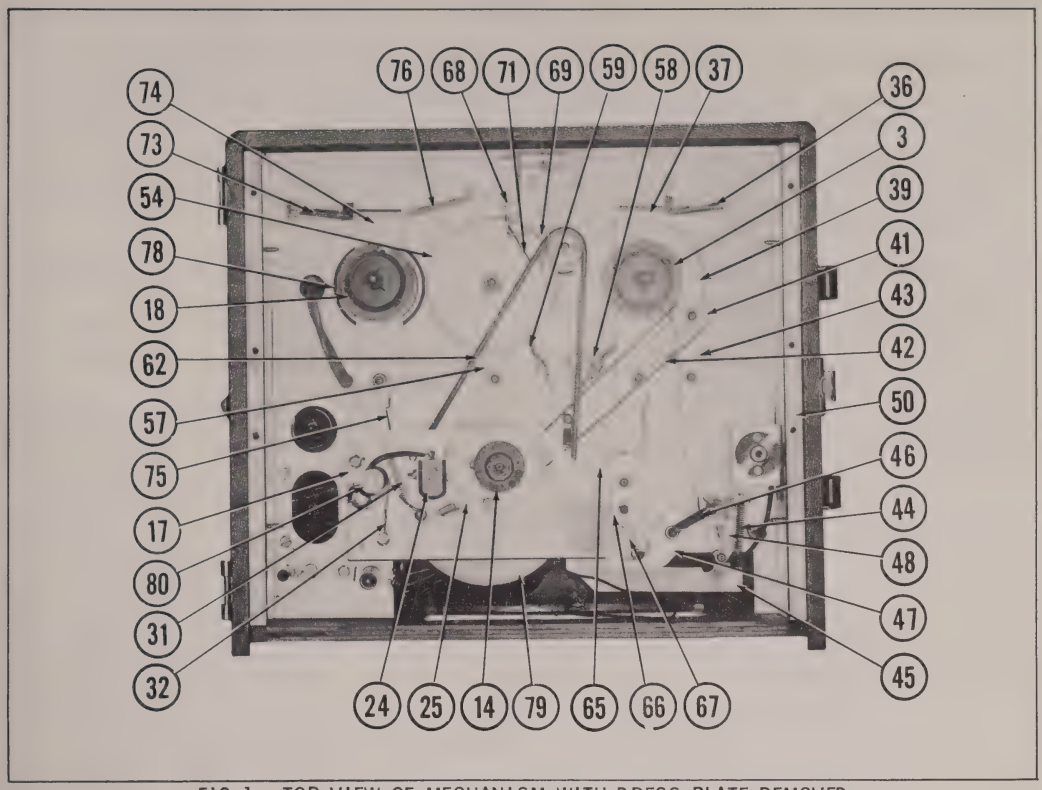


FIG.1 TOP VIEW OF MECHANISM WITH DRESS PLATE REMOVED

Rewind

To rewind the tape at a rapid speed, move the Wind-Rewind control to the left, holding it in this position until the tape is rewound.

Fast Forward

To wind the tape forward at a rapid speed, move the Wind-Rewind control to the right, holding it in this position until the tape is wound to the desired place.

To Play a Recording

1. Thread the tape as described under "Threading the Tape".
2. Turn the Function Selector to the Play position.
3. Adjust the Volume control to the desired listening level.

To Erase a Recording

Any recording on the tape is automatically erased before a new recording is made with the unit in Record. Should it be desired to erase a recording without recording new material, follow the normal recording procedure but set the Volume control fully counter-clockwise and leave the microphone disconnected.

To Edit and Splice Tape

NOTE: It is impossible to edit and splice one track of a two-track recording without affecting the other. Recordings to be edited should be limited to one-track recordings only.

1. Tape may be edited by cutting out unwanted portions or by joining selections into another sequence. Announcements can be inserted between selections, etc. Unused tape can be spliced for reuse.
2. For best results, cut tape at a slight diagonal, butt ends together and fasten on the glossy side with splicing tape. Trim off any excess width.

CLEANING

The tape guides, erase head, record-playback head, pressure roller, and capstan should be cleaned with a soft, lint-free cloth dipped in alcohol to remove tape residue from these parts.

DISASSEMBLY

To Remove Recorder from the Case

1. Remove Function control (9), On-Off Volume (27), and Tone control (28) knobs.
2. Remove reel spindle covers (1).
3. Remove two screws from escutcheon (11) and remove escutcheon.
4. Remove Speed Selector knob (19).
5. Remove two screws from head cover plate (8) and four screws from the dress plate (7).
6. Remove four screws, two from each end of case.
7. Lift the unit up and away from the case and remove the four nuts holding the speaker to the case.
8. Lift entire unit from case.
9. Reverse above procedure to reassemble.

To Remove Amplifier from Tape Transport

1. Remove the bracket holding the record level indicator.
2. Disconnect the motor leads.
3. Disconnect the record-playback head wires from the printed board.
4. Loosen set screw holding lever to switch on printed board.
5. Disconnect line cord from On-Off switch.
6. Remove power transformer from motor mounting plate (88).
7. Remove three screws holding printed board to chassis brackets.
8. Reverse the above procedure to reassemble.

TROUBLE CHART

Symptom	Cause	Remedy
No Record or Playback	1. Drive belt (42) or (62) off or broken.	1. Replace drive belt.
	2. Tension spring (31) disconnected or broken.	2. Replace tension spring.
	3. Defective record-playback head (24).	3. Replace head.
	4. Defective motor (91).	4. Replace motor.
No Rewind	1. Rewind idler (78) loose on shaft.	1. Tighten set screw on idler.
	2. Actuating spring (75) bent or broken.	2. Straighten or replace spring.
	3. Spring (76) unhooked or broken.	3. Replace spring.
No Erase	1. Erase head (80) turned on shaft.	1. Straighten erase head.
	2. Slide lever (84) unhooked from switch operating slide (85).	2. Connect slide lever.
Reel Spindles slip	1. Grease on drive wheels.	1. Clean drive wheels.

MECHANICAL PARTS LIST

Ref. No.	Description	Ref. No.	Description
1	Reel Spindle Cover	9	Function Control Knob
2	Reel Hold Down	10	Screw
3	Takeup Reel Spindle	11	Escutcheon
4	Felt Washer	12	Trim Strip
5	Clutch	13	Wind-Rewind Knob
6	Screw	14	Pressure Roller
7	Dress Plate	15	Screw
8	Head Cover Plate	16	Tape Guide

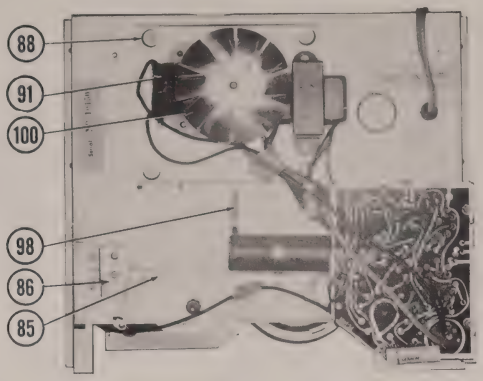


FIG. 2 BOTTOM VIEW OF MECHANISM

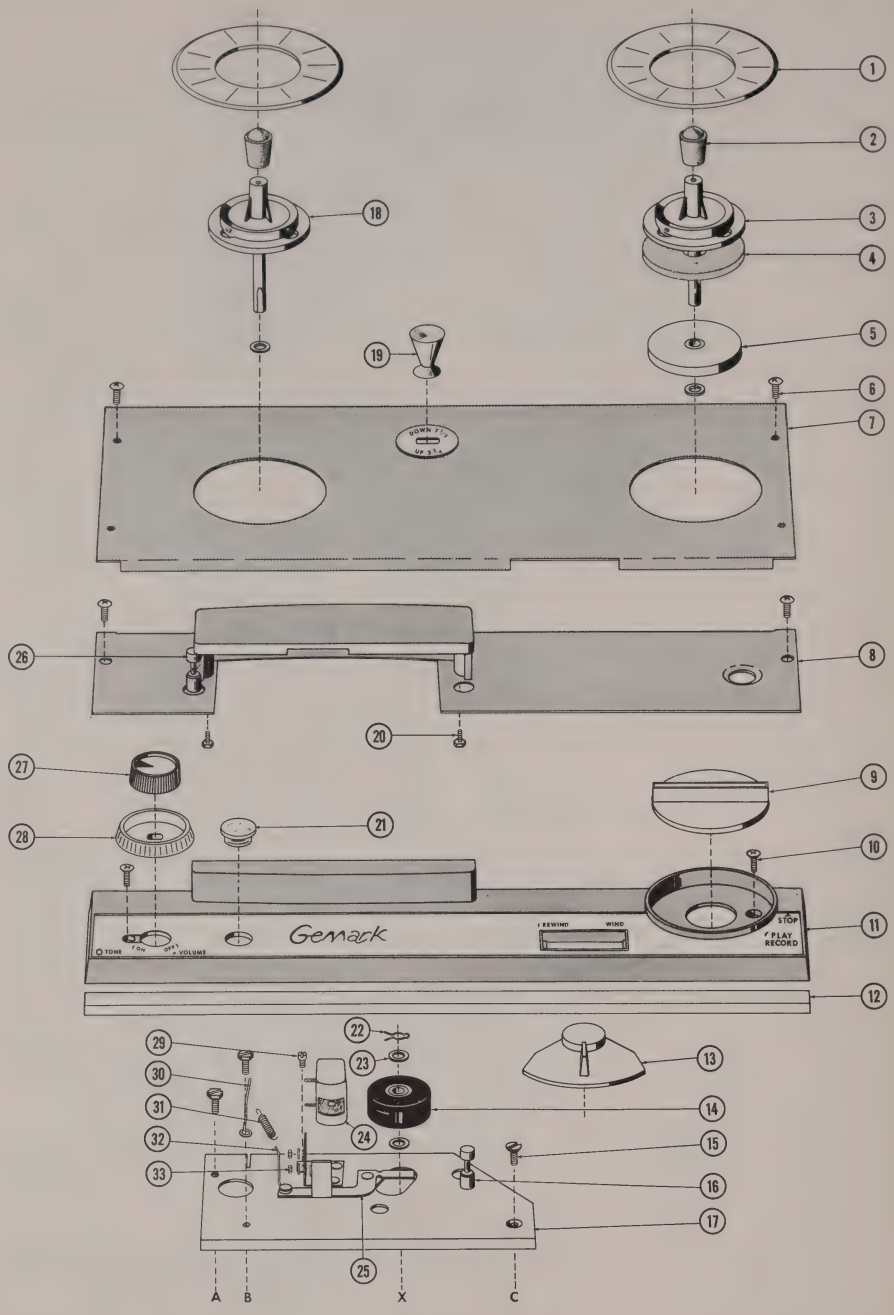
MECHANICAL PARTS LIST (CON'T.)

Ref. No.	Description
17	Head Mounting Plate
18	Supply Reel Spindle
19	Speed Selector Knob
20	Screw
21	Jewel
22	Hairpin Clip
23	Washer
24	Record-Playback Head
25	Pressure Pad Assembly
26	Tape Guide
27	On-Off Volume Knob
28	Tone Knob
29	Screw
30	Tape Guide
31	Spring
32	Part of Item 25
33	Head Mounting Nut
34	Screw
35	Bracket
36	Spring
37	Takeup Reel Mounting Plate
38	Speed Nut
39	Takeup Idler Wheel
40	Hairpin Clip
41	Pulley
42*	*Takeup Drive Belt
43	Takeup Drive Idler Bracket
44	Spring
45	Pressure Roller Actuating Lever
46	Spring
47	Brake Operating Lever
48	Function Control
49	Spring
50	Motor Board Assembly
51	Screw
52	Speed Shift Clip
53	Mounting Bracket
54	Rewind Idler
55	Washer
56	Set Screw
57	Rewind Idler Mounting Bracket
58	Brake Plate

Ref. No.	Description
59	Brake Shoe
60	Brake Shoe Cap
61	Connecting Link
62*	*Flywheel Drive Belt
63	Part of Item 45
64	Bushing
65	Wind-Rewind Slide
66	Wind-Rewind Slide Actuating Lever
67	Wind-Rewind Control
68	Speed Shift Plunger
69	7 1/2 ips Belt Shifter
70	Compression Spring
71	3 3/4 ips Belt Shifter
72	Speed Nut
73	Spring
74	Supply Reel Spindle Mounting Plate
75	Actuating Spring
76	Spring
77	Bushing
78	Rewind Idler
79	Flywheel and Capstan Assembly
80	Erase Head
81	Grip Ring
82	Fish Paper Insulation
83	Support Plate
84	Switch Operating Slide Lever
85	Switch Operating Slide
86	Switch Operating Slide Stop
87	Screw
88	Motor Mounting Plate
89	Grommet
90	Spacer
91	Motor
92	Bushing
93	Erase Head Mounting Shaft
94	Printed Circuit Mounting Bracket
95	Shock Mount
96	Washer
97	Screw
98	Tension Spring
99	Set Screw
100	Fan

* Takeup Drive Belt - WALSCO Part #1410-12.

* Flywheel Drive Belt - WALSCO Part #1410-15.



A PHOTOFACT "EXPLODED" VIEW
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FIG.3A EXPLODED VIEW OF PARTS ABOVE HEAD MOUNTING PLATE

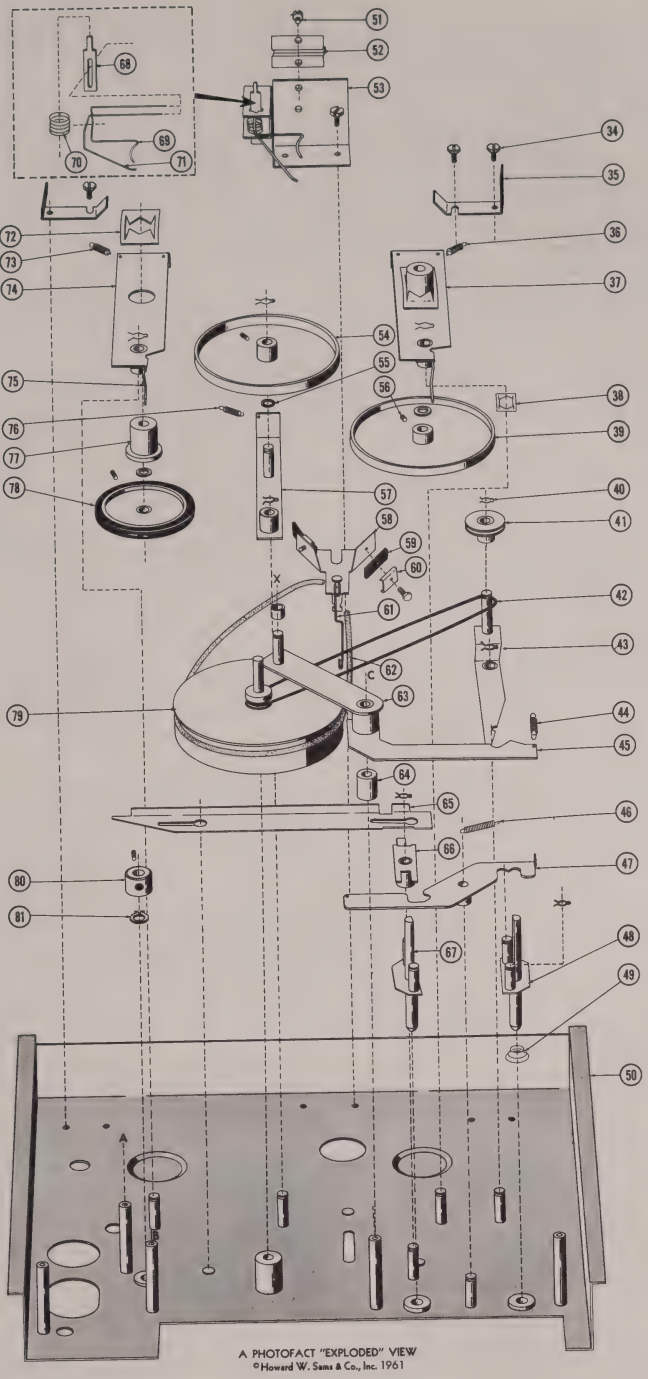


FIG.3B EXPLODED VIEW OF PARTS ABOVE MOTOR BOARD

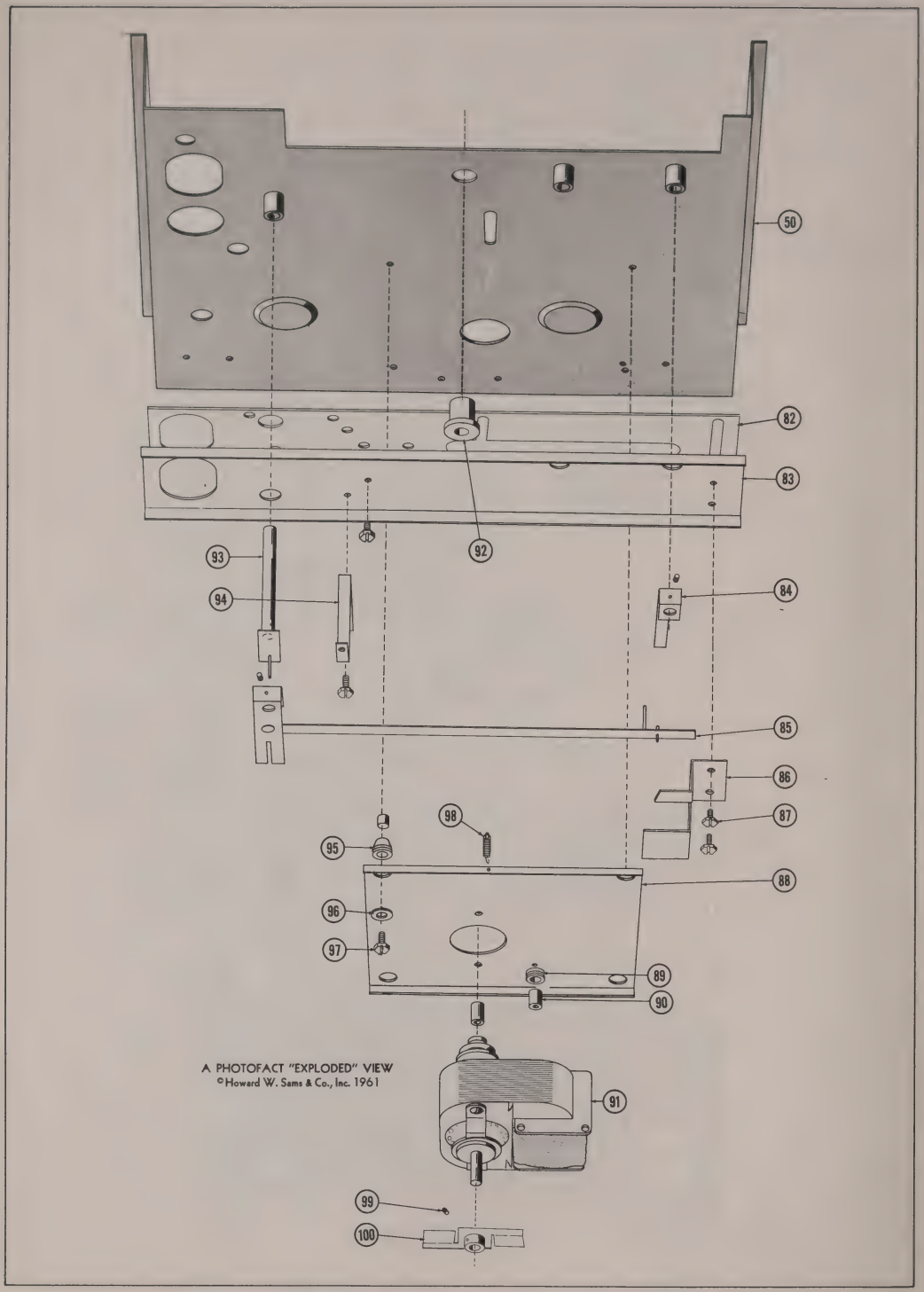


FIG.3C EXPLODED VIEW OF PARTS BELOW MOTOR BOARD

ELECT. PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •		• RAYTHEON • SYLVANIA •			
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Preamplifier	12AX7	V2	AF Amp. - Bias Osc. - Output	6BM8

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA GEMARK PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	170		PR4-185	BBRT7V4125	WQ775	TDLT-8	TVA-4748	
B	20	170							
C	10	170							
C2	50	3		PTT-3050	NLW50-3	TT6X50	MLV50-3	TE-1058	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C4	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C5	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C6	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C7	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	3000		DI-3000	DD-302	BYA10D3	CCD-302	GP230	10TS-D30
C9	.003 300V		P488N-003	D6-302	CUB6D3	6DP-1-302	GEM-623	6TM-D30
C10	50 10%		DI-50	DD-500	L10Q50	CCD-500	GP450	10TS-Q50
C11	.02 600V		P688N-02	DD-203	CUB6S2	6DP-203	GEM-612	6TM-S20

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA GEMARK PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	15K	1/2	101	F1-26*			■ UE3905-S	Tone
B	500K	1/2		R2-42				Volume
C	Switch			KR-1				Power On-Off

■ "STA-LOC" equivalent: FA153L, RU55A, OS2562, IS3000, US41.
* Do not use taps.

RESISTORS (IRC or EQUIVALENT)

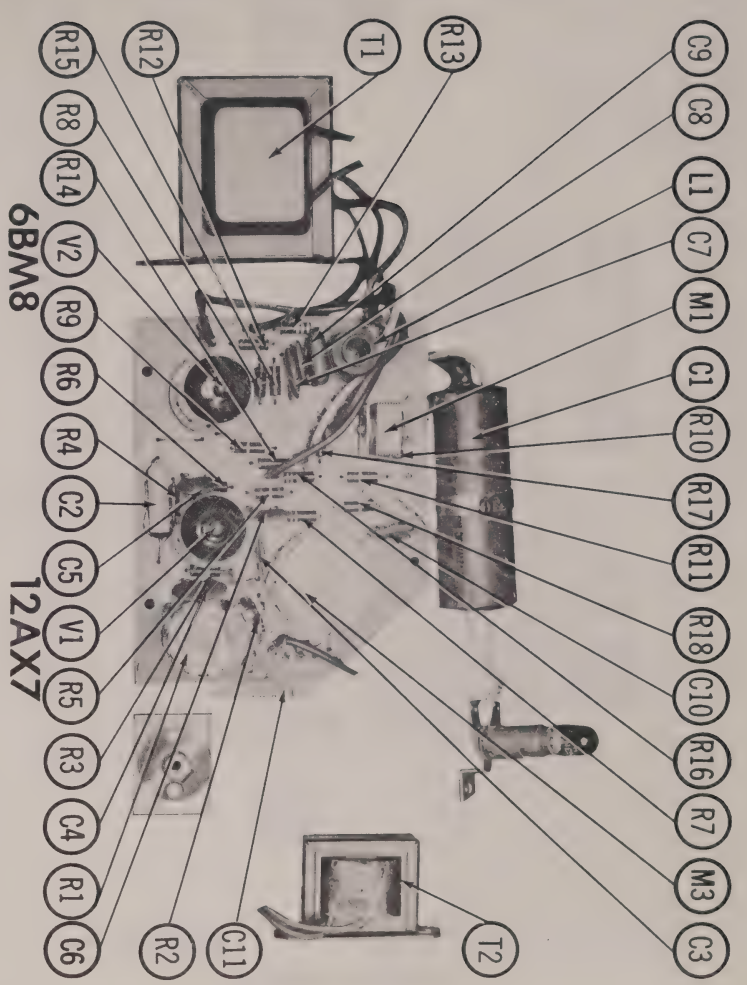
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	3.3meg	
R3	220K	
R4	2200Ω	
R5	100K	
R6	3300Ω	
R7	3.3meg	

ITEM No.	RATING	REMARKS
R8	10meg	
R9	220K	
R10	100K	
R11	220K	
R12	2200Ω	
R13	470K	

ITEM No.	RATING	REMARKS
R14	2200Ω	
R15	220Ω	
R16	33K	
R17	2200Ω	
R18	100K	

AMP CHASSIS—TOP VIEW



ELECT. PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		GEMARK PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Bias Osc.					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	GEMARK PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V ⓐ .25A	170V ⓒ .040A Tap ⓐ 6.3V ⓓ 9A		PT-1001					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	GEMARK PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	2500Ω	3-4Ω	24A17	A-3025	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	GEMARK PART No.	QUAM PART No.	
SP1	4"x 8"	PM	6-8Ω		48A2Z8	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	GEMARK PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.020A * .040A ♦	①	1N1763②	2F4②	SR200②	① Selenium ② Silicon * Measured in Record Position. ♦ Measured in Playback Position.

MISCELLANEOUS

ITEM No.	PART NAME	GEMARK PART No.	NOTES
M2 M3	Head Switch		Record-Playback Function (Rotary Type)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PRINTED BOARD

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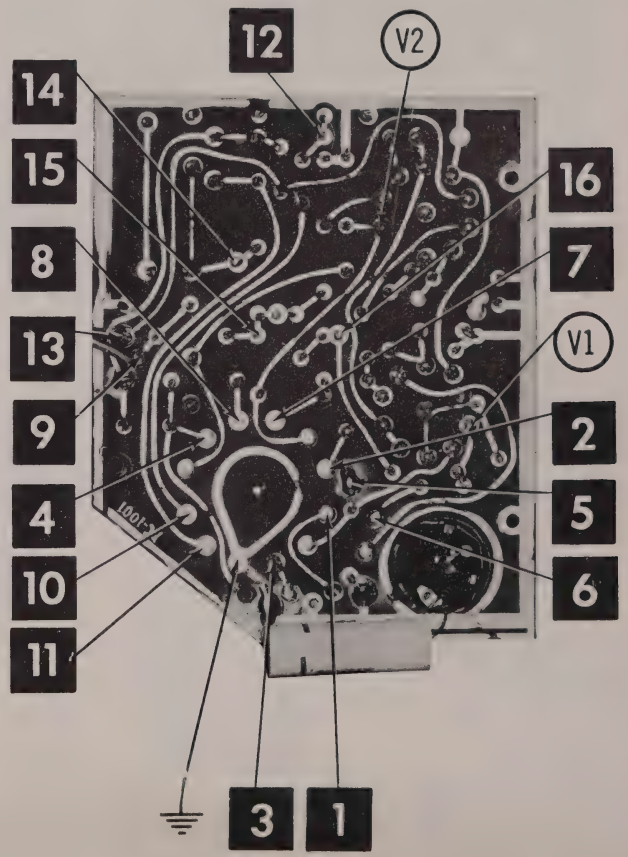
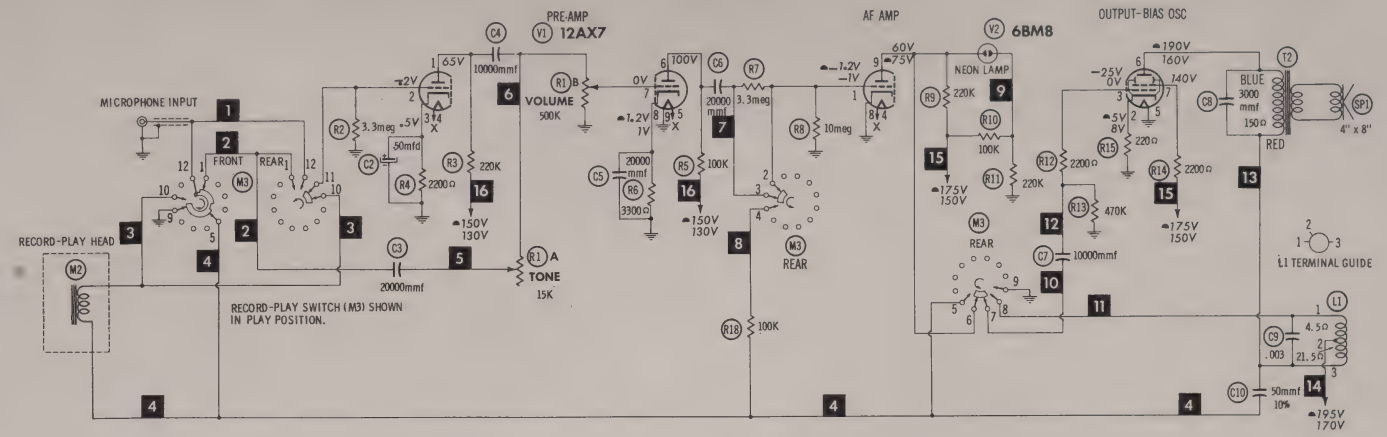
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



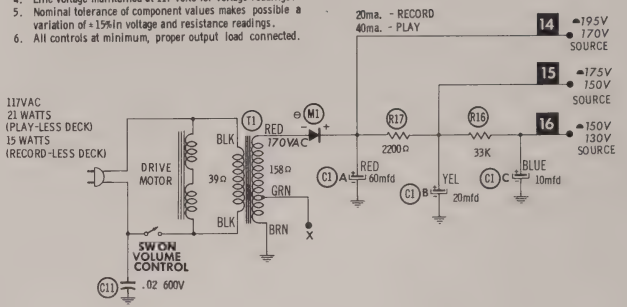


RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	†255K	3.3meg	2200Ω	.1Ω	.1Ω	†135K	0Ω	3300Ω	0Ω
V2	ECL82 6BM8	10meg	220Ω	470K	.1Ω	0Ω	†150Ω	†4400Ω	0Ω	†220K

ALL MEASUREMENTS MADE IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
▰ MEASURED IN "RECORD" POSITION.
ALL MEASUREMENTS MADE WITHOUT DECK.
† MEASURED FROM OUTPUT OF M1.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.



A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®

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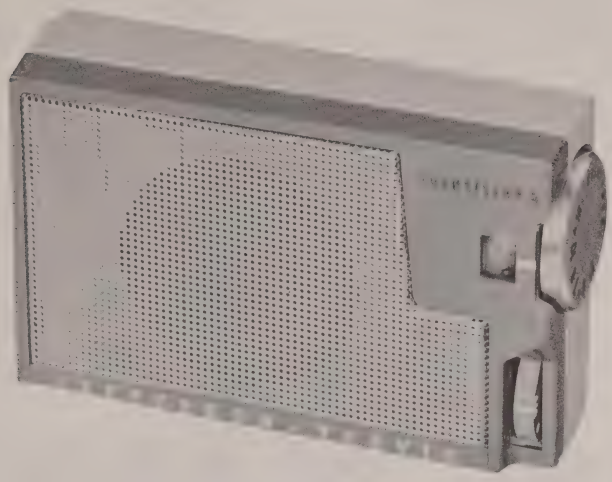
GEMARK
MODEL 101

GEMARK
MODEL 101

PHOTOFACT® Folder with CIRCUITRACE®

JEFFERSON-TRAVIS MODEL JT-E212

JEFFERSON-TRAVIS
MODEL JT-E212



JEFFERSON-TRAVIS
MODEL JT-E212

TRADE NAME	Jefferson-Travis Model JT-E212
SUPPLIER	Jefferson-Travis, Inc., Subsidiary of Emerson Radio & Phonograph Corp., 524 W. 23rd St., New York 11, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC
RATING	5MA @ 9 Volts DC (No Signal, Min. Volume)
	7MA @ 9 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	540 — 1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A4, A6... GENERAL CEMENT #5000, 5003, 5066, 8271, 8272, 8276, 8277, 8290, 8609, 8722, 9150, 9298

WALSCO #2515, 2516, 2518, 2519, 2525, 2541

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .01mfd to antenna stator lug of tuning gang. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2	Adjust for maximum output.
2.	Loop	525KC	Tuning gang fully closed.	"	A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1650KC	Tuning gang fully open.	"	A4	"
4.	"	650KC	650KC	"	A5	"
5.	"	1400KC	1400KC	"	A6	Adjust for maximum output. Repeat Steps 2 thru 5.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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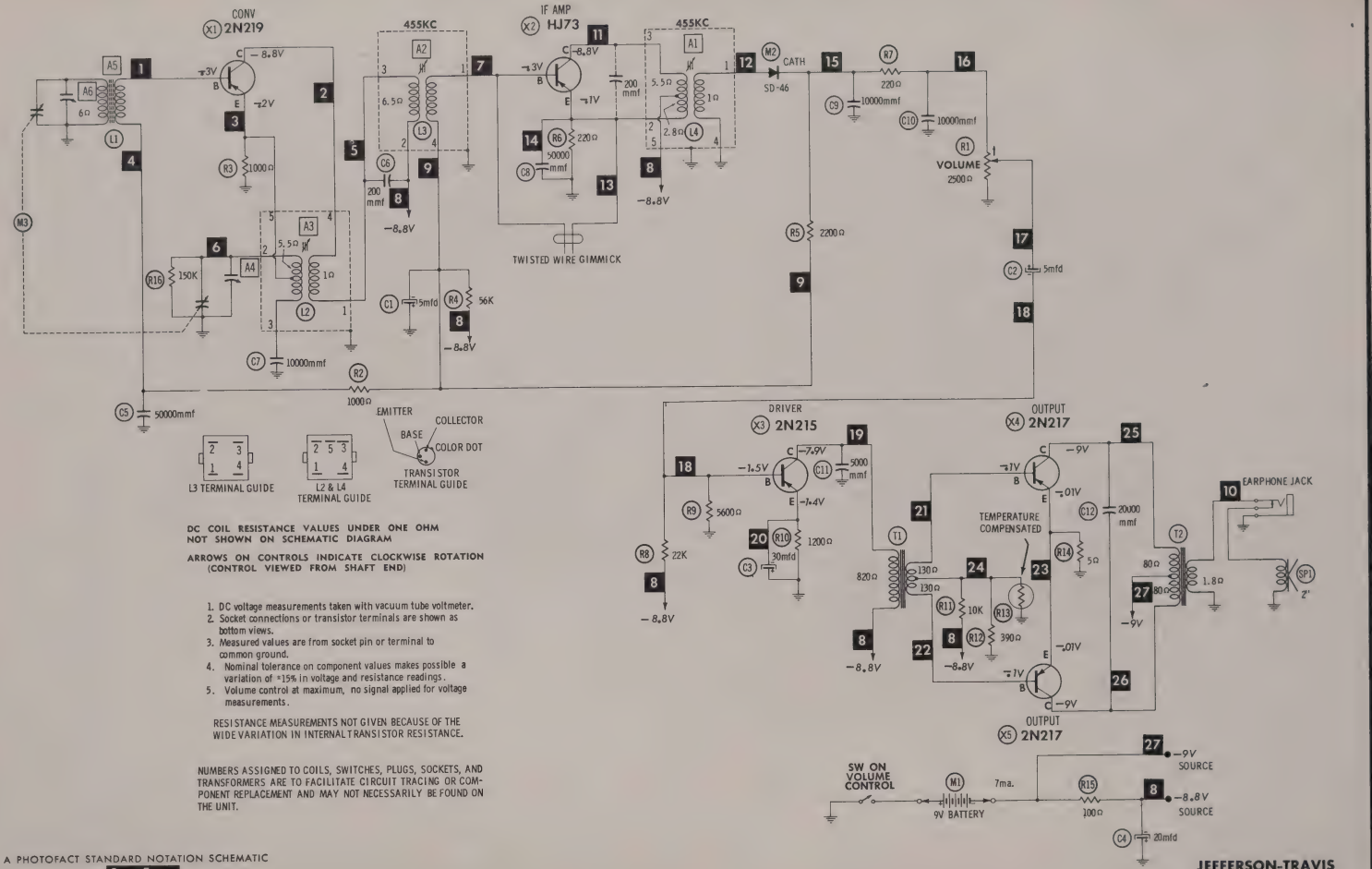
SET 521 FOLDER 9



DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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JEFFERSON-TRAVIS MODEL JT-E212

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N219	Converter	2N219	2N486	2N219	PNP
X2	HJ-73	IF Amplifier		2N483		PNP
X3	2N215	Driver	2N407	2N362	2N104	PNP
X4	2N217	Output	2N407	2N633	2N217	PNP
X5	2N217	Output	2N407	2N633	2N217	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	Jefferson-Travis PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	5	6	CD-231B			TT6X5			
C2	5	6	CD-231B			TT6X5			
C3	30	3	CD-232B						
C4	20	10	CD-233B						

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C6	200		DI-200	DD-201	L10T2	CCD-201	GP320	10TS-T20
C7	10000		C80V103AM		H-05S1		TA-110	TG-S10
C8	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C9	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C10	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C11	5000		BPD-005	DM-502	BYA10D5	CCD-502	TA-250	TG-D50
C12	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Jefferson-Travis PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2500Ω	1/10	RD-133K					Volume & Switch

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	1000Ω	
R3	1000Ω	
R4	56K	
R5	2200Ω	
R6	220Ω	

ITEM No.	RATING	REMARKS
R7	220Ω	
R8	22K	
R9	5600Ω	
R10	1200Ω	
R11	10K	

ITEM No.	RATING	REMARKS
R12	390Ω	
R13	Temp. Comp.	Pt. #B-2B
R14	5Ω	
R15	100Ω	
R16	150K	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		Jefferson-Travis PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Loopstick	LT-168K				
L2	Osc. Coil	LT-235				
L3	Input IF Trans.	LT-326A				
L4	Output IF Trans.	LT-331B				

PRINTED BOARD

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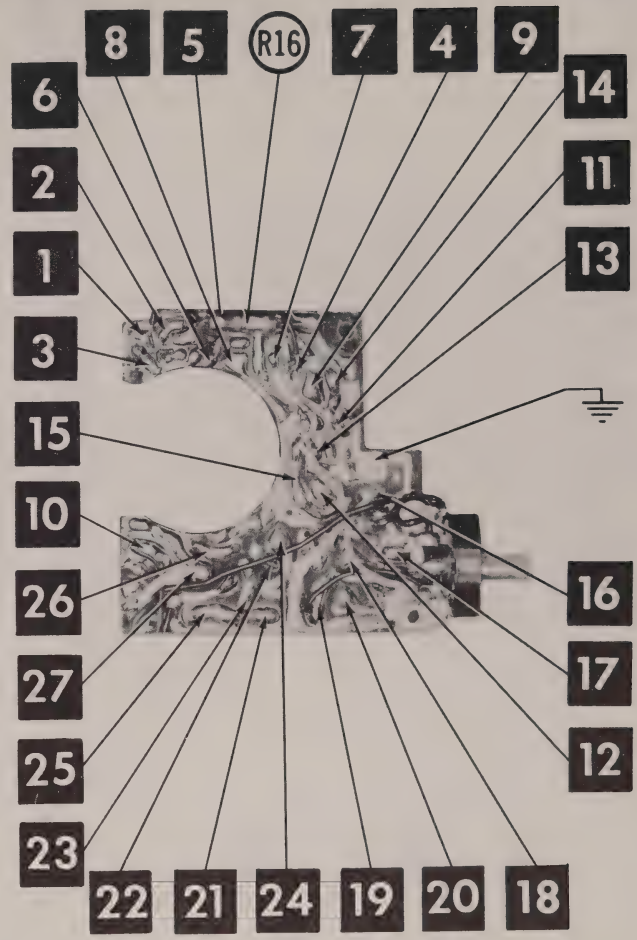


JEFFERSON-TRAVIS
MODEL JT-E212

FOLDER 9

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Jefferson-Travis PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2	1	LT-514					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Jefferson-Travis PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	700Ω CT	6-8Ω	LT-437					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Jefferson-Travis PART No.	QUAM PART No.	
SP1	2"	PM	6-8Ω	SP5-01		

BATTERIES

ITEM No.	VOLTAGE	Jefferson-Travis PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			2U6		216		M-1604	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		Jefferson-Travis PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	SD-46	SD-46		1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	Jefferson-Travis PART No.	NOTES
M3	Tuning Cap.	CD-132	

CABINETS & CABINET PARTS

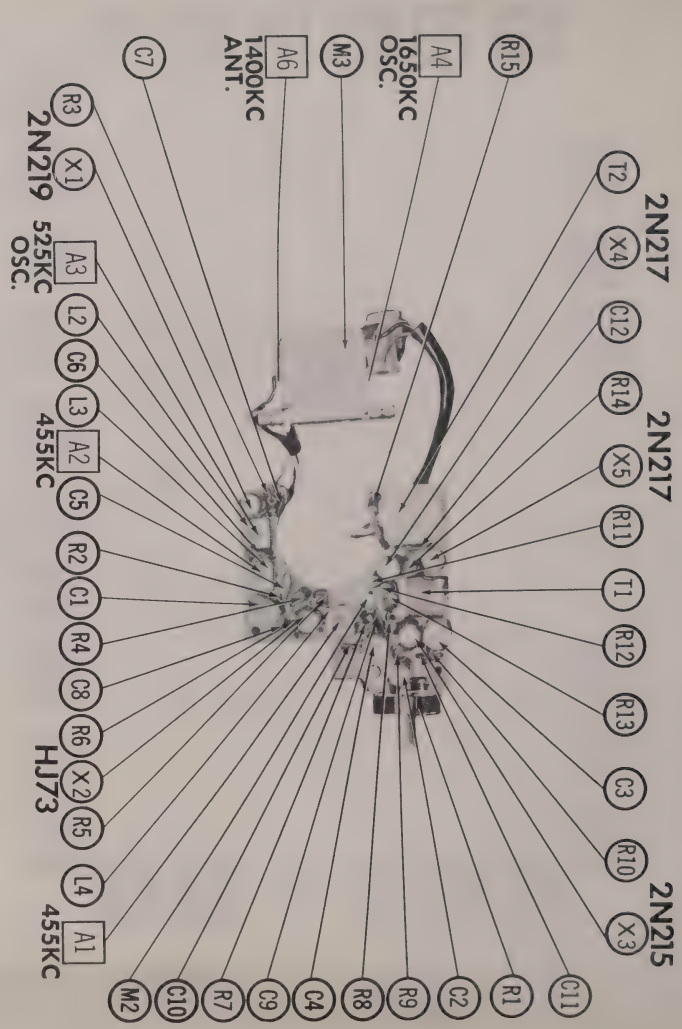
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Cabinet	MD-2301B	

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

JEFFERSON-TRAVIS MODEL JT-G204

JEFFERSON-TRAVIS
MODEL JT-G204

JEFFERSON-TRAVIS
MODEL JT-G204

TRADE NAME	Jefferson-Travis Model JT-G204
SUPPLIER	Jefferson-Travis, Inc., Subsidiary of Emerson Radio & Phonograph Corp., 524 W. 23rd St., New York 11, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	6 Volts DC
RATING	7MA @ 6 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	540 — 1600KC
	15MA @ 6 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A5, and A7... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to antenna stator lug of tuning gang.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	Loop	535KC	Tuning gang fully closed.	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1650KC	Tuning gang fully open.	"	A5	"
4.	"	630KC	630KC	"	A6	"
5.	"	1400KC	1400KC	"	A7	Adjust for maximum output. Repeat Steps 2 thru 5.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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SET 521 FOLDER 10

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2S30	Converter	2N412			PNP
X2	2S31	1st IF Amplifier	2N410			PNP
X3	2S31	2nd IF Amplifier	2N410			PNP
X4	2S32	AF Amplifier	2N406			PNP
X5	2S32	Driver	2N406			PNP
X6	2S33	Output	2N408			PNP
X7	2S33	Output	2N408			PNP
X8	KV-1	Bias Diode				

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	Jefferson-Travis PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	5	6	CD-231B	BCD-6005	NLW5-6	PET1535	ML5-6	TE-1084	
C2	30	3	CD-232B	BCD-3025	NLW25-3	PET130	ML25-6	TE-1092	
C3	5	6	CD-231B	BCD-6005	NLW5-6	PET1535	ML5-6	TE-1084	
C4	5	6	CD-220		NLW5-6	T76X5	ML5-6	TE-1084	
C5	30	3	CD-232B	BCD-3025	NLW25-3	PET130	ML25-6	TE-1092	
C6	5	6	CD-231B	BCD-6005	NLW5-6	PET1535	ML5-6	TE-1084	
C7	30	3	CD-232B	BCD-3025	NLW25-3	PET130	ML25-6	TE-1092	
C8	100	6	CD-225	PTT6100	NLW100-6	TT6X100	ML100-6	TE-1102	
C9	20	10	CD-233B	BCD-12020	NLW20-15	TT15X20	MLV20-12	TE-1130	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C10	10000		C80V103AM	DM-103	H-05S1	CCD-103	TA-110	TG-S10
C11	5000		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C12	10		DI-10	DD-100	L10T1	CCD-100	GP410	10TS-Q10
C13	5		DI-5	DD-050	L10V5	CCD-050	GP550	10TS-V50
C14	50000		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C15	10000		C80V103AM	DM-103	H-05S1	CCD-103	TA-110	TG-S10
C16	10000		C80V103AM	DM-103	H-05S1	CCD-103	TA-110	TG-S10
C17	1000		C80V102AM	DM-102	H-05D1	CCD-102	B-210	5HK-D10
C18	5000		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C19	5000		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C20	20000		C80V203AM	DA-203	H-05S2	CCD-203	TA-120	TG-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Jefferson-Travis PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4	RD-118-2A	B16-214				Volume & Switch

(CONTINUED ON BACK PAGE)

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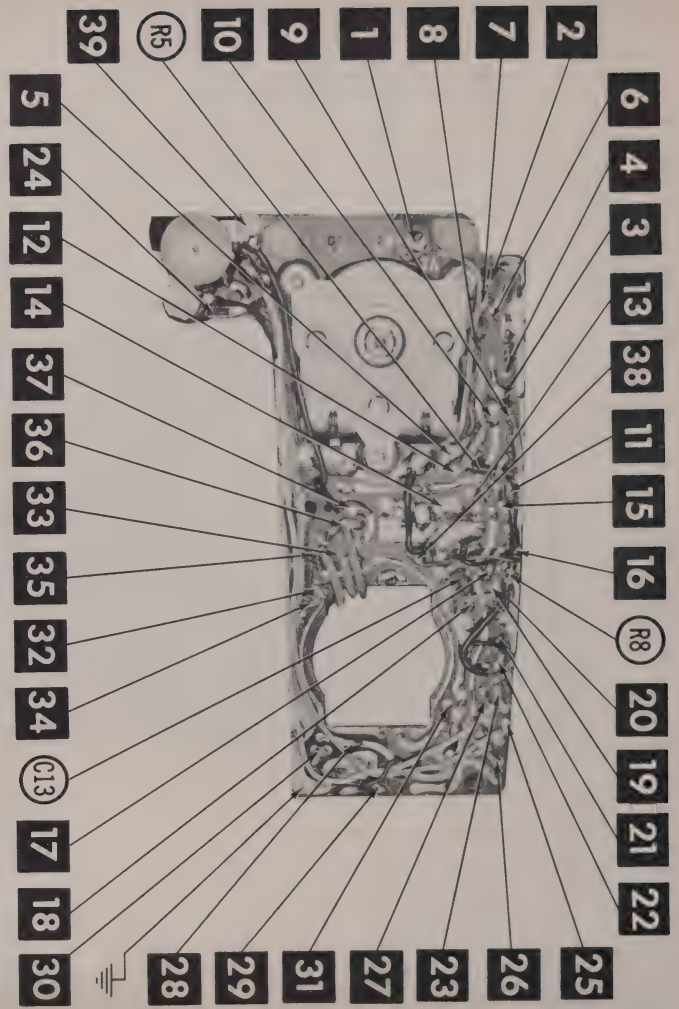
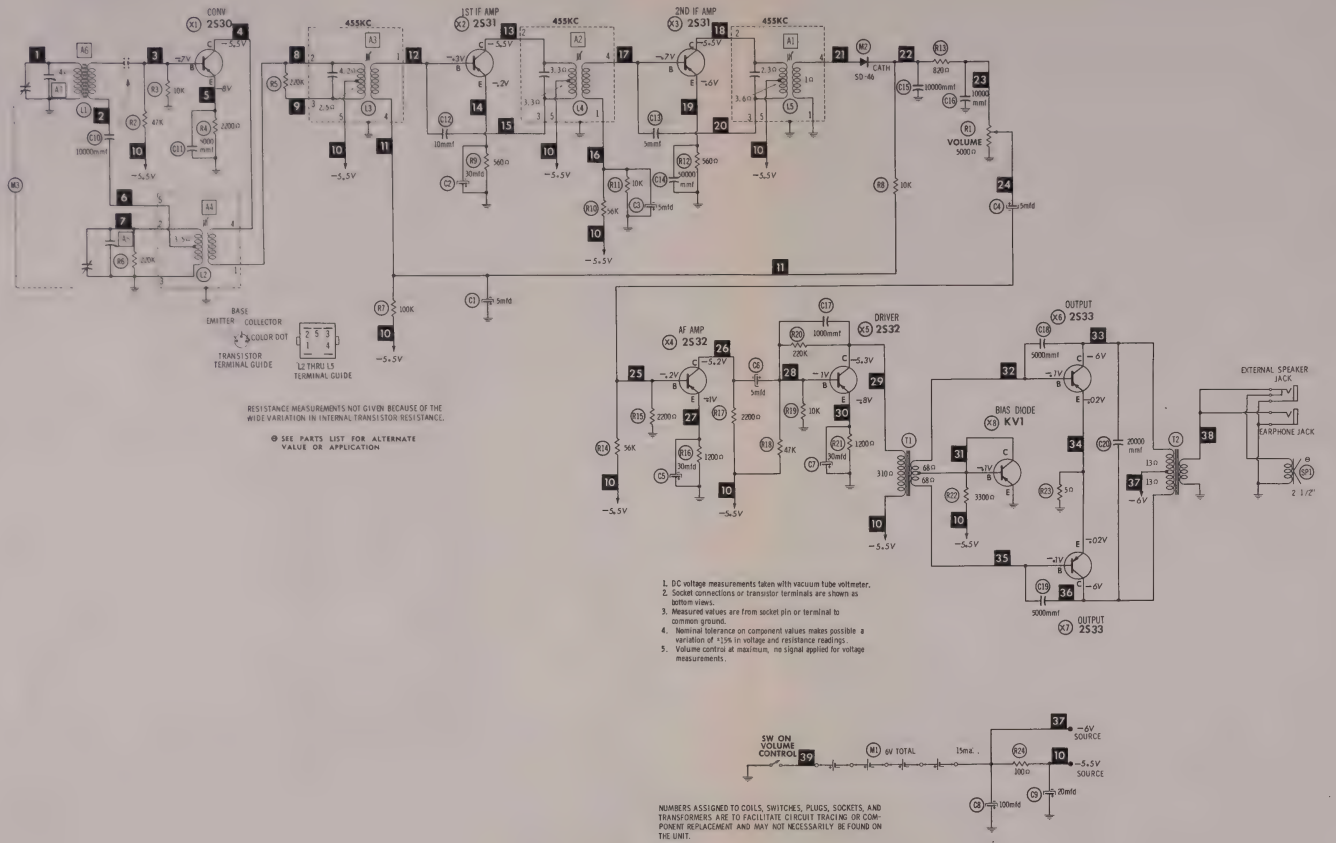
PRINTED BOARD





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JEFFERSON-TRAVIS
MODEL JT-G204

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	47K				R14	56K			
R3	10K				R15	2200Ω			
R4	2200Ω				R16	1200Ω			
R5	220K				R17	2200Ω			
R6	220K				R18	47K			
R7	100K				R19	10K			
R8	10K				R20	220K			
R9	560Ω				R21	1200Ω			
R10	56K				R22	3300Ω			
R11	10K				R23	5.0Ω			
R12	560Ω				R24	100Ω			
R13	820Ω								

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		Jefferson-Travis PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Loopstick	LT-153K				
L2	Osc. Coil	LT-230				
L3	1st IF Trans.	LT-328A				
L4	2nd IF Trans.	LT-328B				
L5	3rd IF Trans.	LT-328C				

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Jefferson-Travis PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.5	1	LT-515					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Jefferson-Travis PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1000Ω CT	6-8Ω	LT438					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Jefferson-Travis PART No.	QUAM PART No.	
SP1	2½"	PM	8-10Ω	SP6.5-02 *		* Alternate Part #SP6-5-02A

BATTERIES

ITEM No.	VOLTAGE	Jefferson-Travis PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	*		930 *		1015 *		M-15R*	* 4 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		Jefferson-Travis PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	SD-46	SD-46		1N60	1N60	Detector (Pigtail)

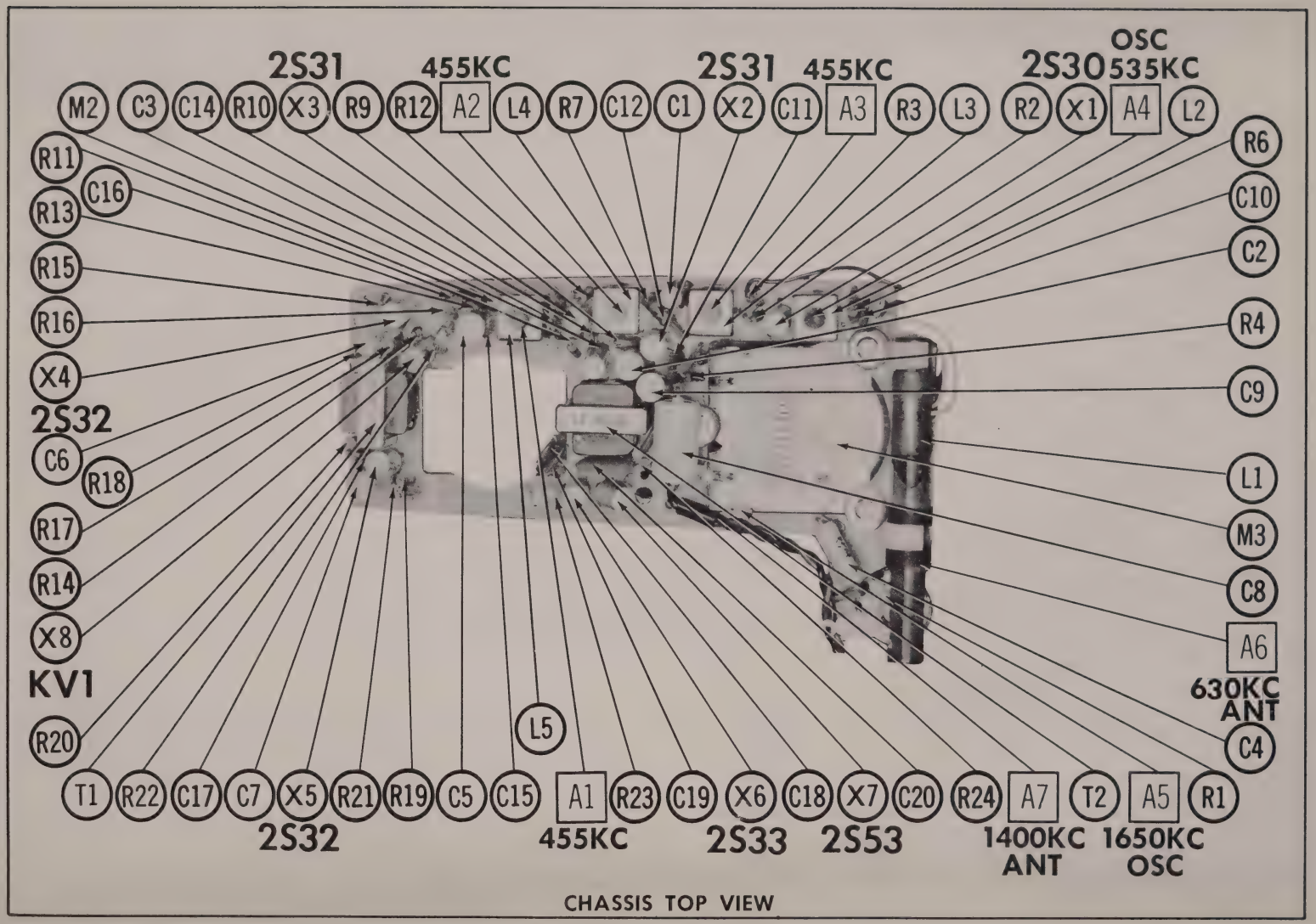
MISCELLANEOUS

ITEM No.	PART NAME	Jefferson-Travis PART No.	NOTES
M3	Tuning Cap.	CD-128	2 Gang

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Cabinet	MD-1930B	



CHASSIS TOP VIEW

PHOTOFACT® Folder

OLSON
MODEL RA-355

OLSON
MODEL RA-355

OLSON
MODEL RA-355

TRADE NAME	Olson Model RA-355
SUPPLIER	Olson Radio Corp., 260 S. Forge Street, Akron 8, Ohio
TYPE SET	Battery Operated 4 Tube Portable Receiver
POWER SUPPLY	1.5 Volts DC "A" Supply & 67.5 Volts DC "B" Supply RATING 250MA@1.5Volts DC & 10MA@67.5 Volts DC
TUNING RANGE—BROADCAST	540 — 1600KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3, A5. GENERAL CEMENT #8721, 8722
WALSCO #2519
A4, A6..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	1400KC	"	A6	Adjust for maximum output. Repeat Steps 2, 3 and 4.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KF367

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SET 521 FOLDER 11

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Converter	1R5	V3	Det. -AVC-AF Amp.	1U5
V2	IF Amplifier	1T4	V4	Output	3S4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	OLSON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	10	80		PRS1410	BBR10-90	TC42	TD-10-150	TVA-1406	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C3	100		SI 100	D6-101	LI0T1	CCD-101	GP310	10TS-T10
C4	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C5	250		DI-250	DD-251	LI0T25	CCD-251	GP325	10TS-T25
C6	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D5
C7	100		SI 100	D6-101	LI0T1	CCD-101	GP310	10TS-T10
C8	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C9	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C10	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	OLSON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	1meg	1/10						Volume & Switch

RESISTORS (IRC or EQUIVALENT)

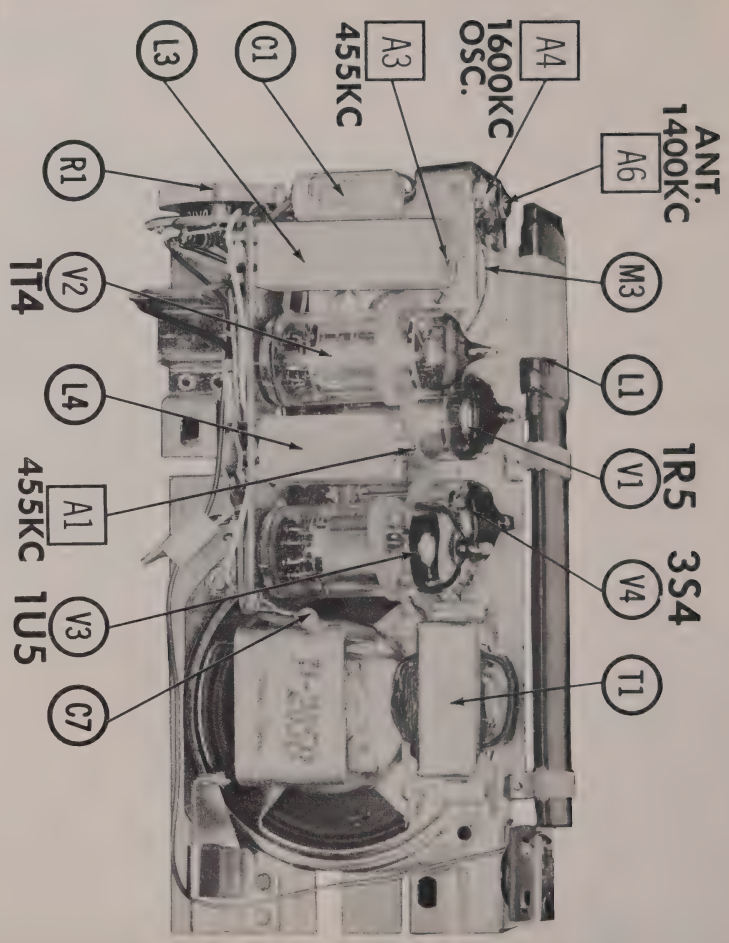
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	100K	
R3	3.3meg	
R4	10K	

ITEM No.	RATING	REMARKS
R5	1.2meg	
R6	4.7meg	
R7	10meg	

ITEM No.	RATING	REMARKS
R8	3.3meg	
R9	600Ω	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		OLSON PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1 L2 L3 L4	Loopstick Osc. Input IF Output IF					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	OLSON PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3600Ω	6-8Ω						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	OLSON PART No.	QUAM PART No.	
SP1	2½"	PM	6-8Ω	P-205B	25A07Z8	

BATTERIES

ITEM No.	VOLTAGE	OLSON PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1 M2	1.5V 67.5V		230	UX45	A-100	416	M-13R	M-217	

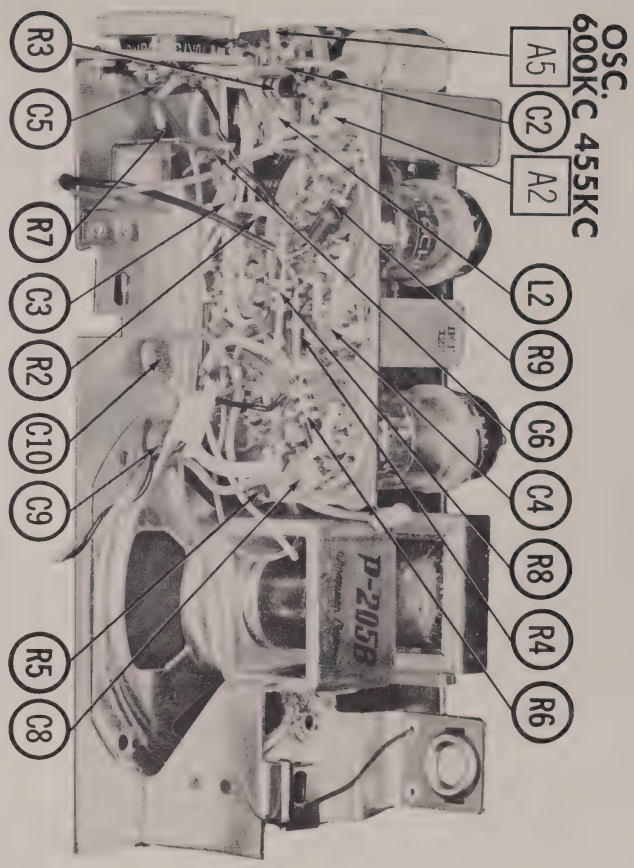
MISCELLANEOUS

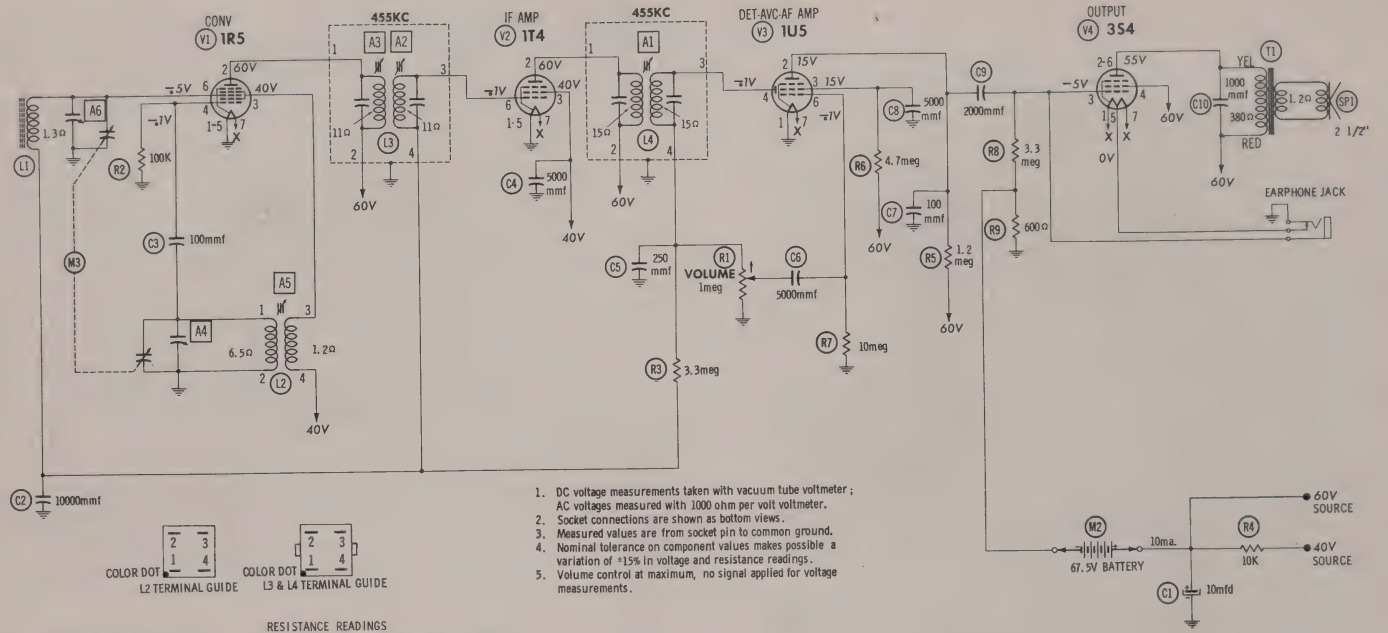
ITEM No.	PART NAME	OLSON PART No.	NOTES
M3	Tuning Cap.		2 Gang

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—BOTTOM VIEW





1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1R5	0Ω	†10Ω	†10K	100K	0Ω	4.3meg	*
V2	1T4	0Ω	†15Ω	†10K	TP	0Ω	4.3meg	*
V3	1U5	0Ω	†1.2meg	†4.7meg	1meg	TP	10meg	*
V4	3S4	*	†380Ω	3.3meg	†0Ω	0Ω	NC	*

† MEASUREMENTS TAKEN FROM POSITIVE SIDE OF BATTERY. ALL RESISTANCE TAKEN WITH BATTERY DISCONNECTED

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE

TP TIE POINT
NC NO CONNECTION

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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OLSON
MODEL RA-355

PHOTOFACT® Folder with CIRCUITRACE®

PHILCO MODELS
T-76B, BR, T

PHILCO MODELS
T-76B, BR, T

PHILCO MODELS
T-76B, BR, T

TRADE NAME	Philco Models T-76B, T-76BR, T-76T (Code 124)		
MANUFACTURER	Philco Corp., Tioga & C Streets, Philadelphia, Pa.		
TYPE SET	Battery Operated Transistorized Portable AM Receiver		
POWER SUPPLY	3 Volts DC	RATING	15MA @ 3 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	535 — 1620KC		20 MA @ 3 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 Thru A4... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A5..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A6, A7..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

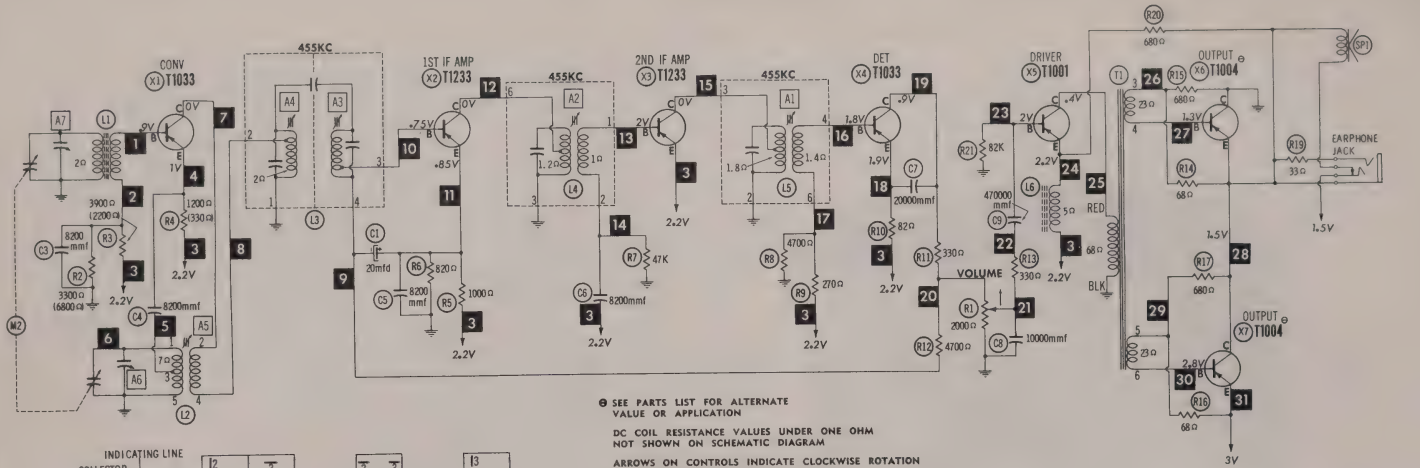
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to antenna stator lug of tuning gang. Low side to chassis.	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	600KC	600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output while rocking tuning gang.
3.	"	1620KC	Tuning gang fully open.	"	A6	Adjust for maximum output.
4.	"	1400KC	1400KC Signal.	"	A7	Mount chassis in cabinet and adjust A7 for maximum output.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KF253

SET 521 FOLDER 12



INDICATING LINE
COLLECTOR
EMITTER
BASE
TRANSISTOR TERM GUIDE

TERM VIEW L3

TERM VIEW L5

TERM VIEW L4

TERM VIEW T1

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®
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PHILCO MODELS T-76B, BR, T

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	T1033	Converter				PNP
X2	T1233	1st IF Amplifier				PNP
X3	T1233	2nd IF Amplifier				PNP
X4	T1033	Detector				PNP
X5	T1001	Driver	2N406		2N406	PNP
X6	T1004 *	Output	2N270			PNP ⎫ Matched
X7	T1004 *	Output	2N270			PNP ⎭ Pair

* Alternate Type T-1008.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	20	6	30-2588-1	PTT6020	NLW20-6	TT15X20	MLV20-12	TE-1090	
C2	100	3	30-2588-2	PTT3100	NLW100-6	TT6X100	ML100-3	TE-1059.5	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	8200			DD-822		CCD-822	B-282	
C4	8200			DD-822		CCD-822	B-282	
C5	8200			DD-822		CCD-822	B-282	
C6	8200			DD-822		CCD-822	B-282	
C7	20000		C80V203AM	DA-203	H-0582	CCD-203	TA-120	TG-S20
C8	10000		C80V103AM	DM-103	H-0581	CCD-103	TA-110	TG-S10
C9	470000	#30-1279-4		UK10-474				

\# Philco Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2000Ω	1/4	33-5583-3					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	3300Ω			(6800Ω) *	R12	4700Ω			
R3	3900Ω			(2200Ω) *	R13	330Ω			
R4	1200Ω			(330Ω) *	R14	68Ω			
R5	1000Ω				R15	680Ω			
R6	820Ω				R16	68Ω			
R7	47K				R17	680Ω			
R8	4700Ω				R18	82Ω			
R9	270Ω				R19	33Ω			
R10	82Ω				R20	680Ω			
R11	330Ω				R21	82K			

* Used in early production versions.

PRINTED BOARD

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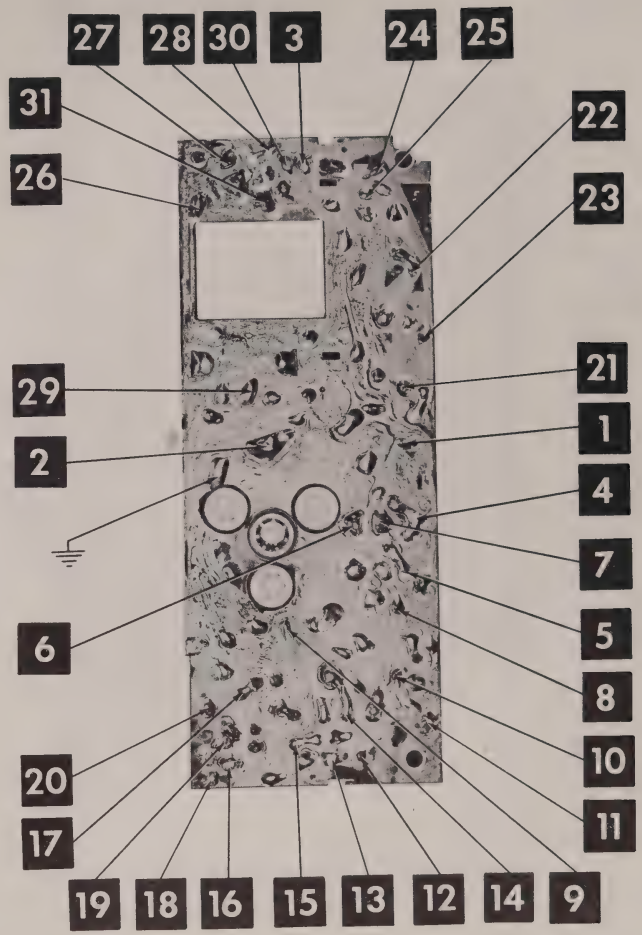


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		PHILCO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Loopstick	32-4668-7				
L2	Osc	32-4669-4				
L3	1st IF	32-4608-9				
L4	2nd IF	32-4708-10				
L5	3rd IF	32-4708-11				
L6	RF Choke (400uh)	32-4685-1	TV-202	6136		

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	PHILCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2	1 SEC. 2 1	32-8838-1					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	QUAM PART No.	
SP1	2 3/4"	PM	6-8Ω	36-1664-4	27A06Z8	

BATTERIES

ITEM No.	VOLTAGE	PHILCO PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	P-920 *		230 *		A100 *		M-13R *	* 2 Required

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M2	Tuning Cap. Printed Board	31-2782 54-6603-2	2 Gang (Ant. 12-137mmf, Osc. 19-90mmf)

CABINETS & CABINET PARTS

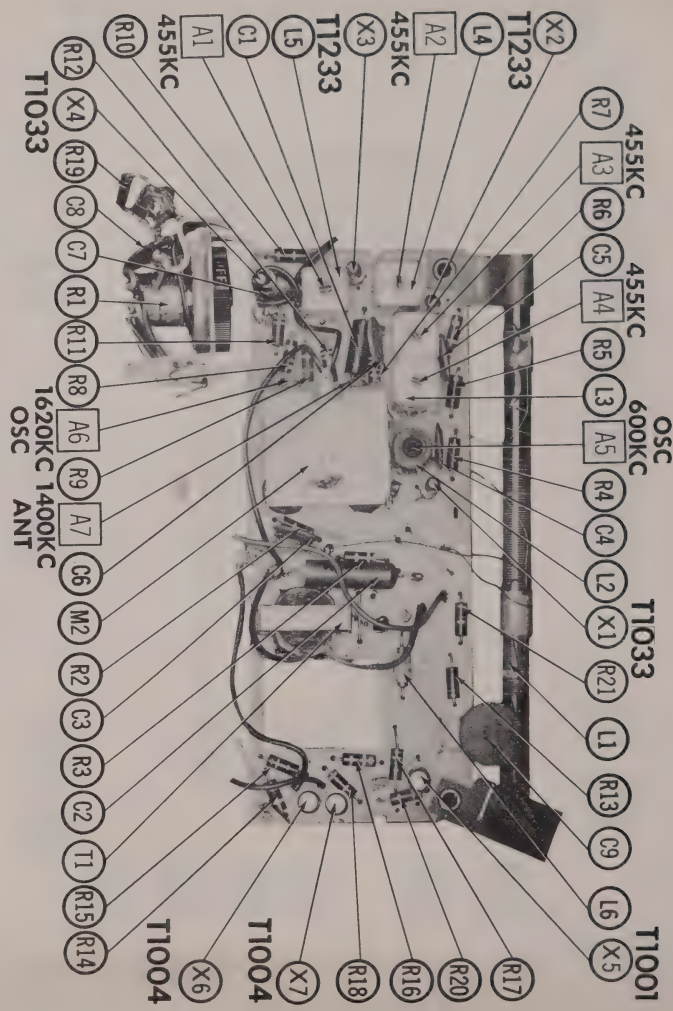
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	424-8093	Tuning, Model T-76B
Knob	424-8092	Tuning, Models T-76BR, T-76T
Knob	54-6859-1	Volume, Models T-76BR, T-76T
Knob	54-6859-2	Volume, Model T-76B
Cabinet	424-8107	Model T-76B
Cabinet	424-8115	Model T-76BR
Cabinet	424-8109	Model T-76T

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

SYLVANIA, GOLDEN SHIELD CHASSIS 649-1, -2

SYLVANIA, GOLDEN SHIELD
CHASSIS 649-1, -2

SYLVANIA MODEL 5P16

SYLVANIA, GOLDEN SHIELD
CHASSIS 649-1, -2

TRADE NAME	Sylvania Models 5P16R, 5P16S, 5P16T Golden Shield Models 2300, 2406, 2409, 2500, 2601, 2602, 2605, 2609, 2700, 2701, 2714(Ch. 649-1, 649-2)
MANUFACTURER	Sylvania Home Electronics, Div. of Sylvania Electric Products, Inc., 700 Ellicott St., Batavia, N. Y.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	9 Volts DC RATING 15MA @ 9 Volts DC (Min. -Normal Volume, No Signal)
TUNING RANGE—BROADCAST	540 – 1650KC 25MA @ 9 Volts DC (Max. Volume With Signal)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A3..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A4, A5... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	600KC	600KC	"	A3	Adjust for maximum output while rocking tuning gang.
3.	"	1650KC	1650KC	"	A4	Adjust for maximum output.
4.	"	1450KC	1450KC Signal.	"	A5	"

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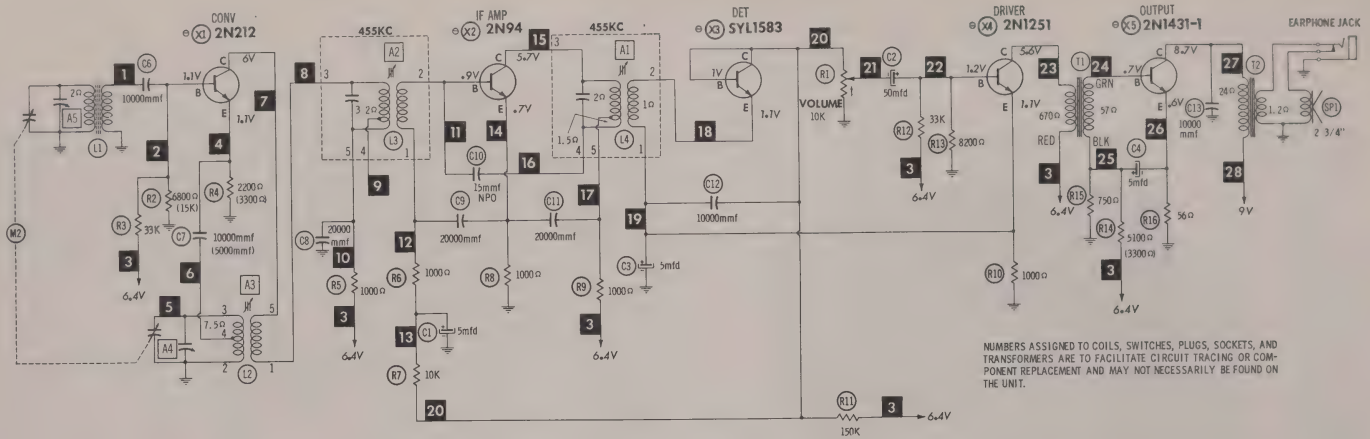
SET 521 FOLDER 13



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

NOTE: CHASSIS 649-1 & 649-2 ARE IDENTICAL EXCEPT FOR FOLLOWING:
1. PNP TRANSISTORS IN CHASSIS 649-2 (SEE PARTS LIST)
2. BATTERY AND ELECTROLYTIC POLARITY REVERSED IN CHASSIS 649-2.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

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SYLVANIA, GOLDEN SHIELD CHASSIS 649-1, -2

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N212 *	Converter		2N1366	2N212	NPN
	2N194A †	Converter		2N1367	2N194	NPN
	2N412 ♦	Converter	2N412	2N486	2N412	PNP
X2	2N94 *	IF Amplifier	2N410	2N1367	2N94	NPN
	2N410 ♦	IF Amplifier	2N410	2N483	2N410	PNP
X3	SYL1583	Detector	2N410	CK879		PNP
X4	2N1251 *	Driver	2N649			NPN
	SYL1396 †	Driver	2N649			NPN
	SYL1858 †	Driver	2N649			NPN
	2N406 ♦	Driver	2N406	2N633	2N406	PNP
X5	2N1431-1*	Output	2N649			NPN
	2N1059 †	Output	2N649		2N1059	NPN
	SYL1329 †	Output	2N649			NPN
	2N408 ♦	Output	2N408	2N633	2N408	PNP

* Used in Chassis 649-2.
† Used in some versions of Chassis 649-2.
♦ Used in Chassis 649-1.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	5	3	161-1054	PTT-3005	NLW5-15	TT6X5	ML5-6	TE-1052.2	
C2	50	3	161-1050	PTT-3050	NLW50-3	TT6X50	ML50-3	TE-1058	
C3	5	3	161-1054	PTT-3005	NLW5-15	TT6X5	ML5-6	TE-1052.2	
C4	5	3	161-1054	PTT-3005	NLW5-15	TT6X5	ML5-6	TE-1052.2	
C5	50	10	161-1039	PTT-10050	NLW50-10	TT10X50	ML V50-10	TE-1119	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	10000	(5000) †	BPD-01	DM-103	H-05S1	CCD-103	TA-110	TG-S10
C7	10000		BPD-01	DM-103	H-05S1	CCD-103	TA-110	TG-S10
C8	20000		BPD-02	DA-203	H-05S2	CCD-203	TA-120	TG-S20
C9	20000		BPD-02	DA-203	H-05S2	CCD-203	TA-120	TG-S20
C10	15 NPO		NPO-DI 15	DTZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C11	20000		BPD-02	DA-203	H-05S2	CCD-203	TA-120	TG-S20
C12	10000		BPD-01	DA-103	H-05S1	CCD-103	TA-110	TG-S10
C13	10000		BPD-01	DA-103	H-05S1	CCD-103	TA-110	TG-S10

† Alternate Value

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	10K	1/4	157-0058					Volume & Switch

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R2	6800Ω	(15K) †
R3	33K	
R4	2200Ω	(3300Ω) †
R5	1000Ω	
R6	1000Ω	
R7	10K	

ITEM No.	RATING	REMARKS
R8	1000Ω	
R9	1000Ω	
R10	1000Ω	
R11	150K	
R12	33K	
R13	8200Ω	

ITEM No.	RATING	REMARKS
R14	5100Ω	(3300Ω) *
R15	750Ω	
R16	560Ω	
R17	470Ω	

† Used in Chassis 649-1.
* Used in Chassis 649-1 Coded 01.

PRINTED BOARD

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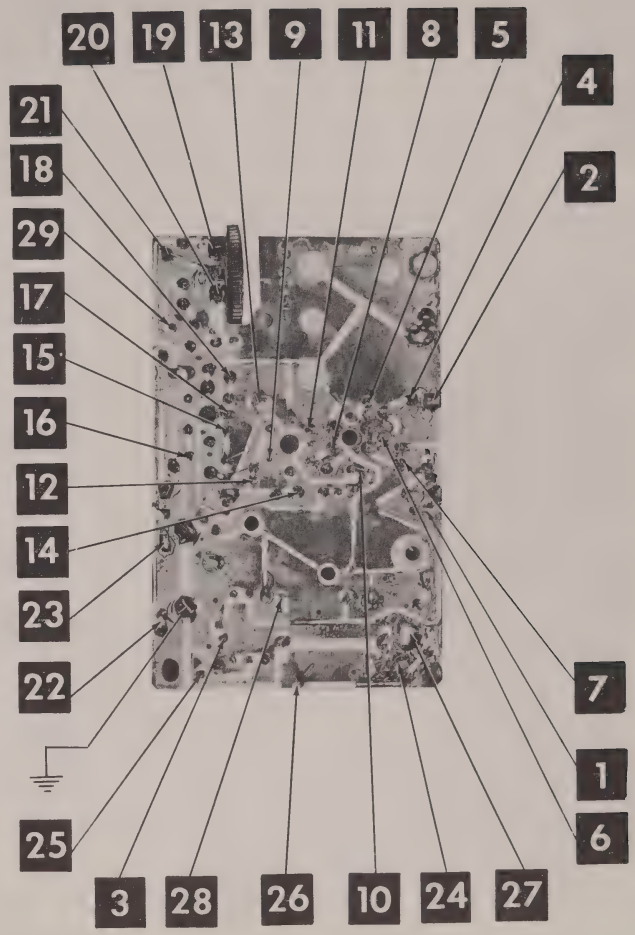


SYLVANIA, GOLDEN SHIELD
CHASSIS 649-1, -2

FOLDER 13

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		SYLVANIA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	Loopstick	581-0021		2003		
L2	Osc.	113-0078				
L3	1st IF Trans.	121-0035				
L4	2nd IF Trans.	122-0036				

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SYLVANIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3.2	1	143-0086					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SYLVANIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	350Ω	10-12Ω	143-0085		TA-41①			① Use 16Ω Tap

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	QUAM PART No.	
SP1	2 3/4"	PM	10-12Ω	539-2301	27A06Z12	

BATTERIES

ITEM No.	VOLTAGE	SYLVANIA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			2N6		246		M-1602	

MISCELLANEOUS

ITEM No.	PART NAME	SYLVANIA PART No.	NOTES
M2	Tuning Cap. Printed Board	170-0041 32-96451-2	2 Gang

CABINETS & CABINET PARTS

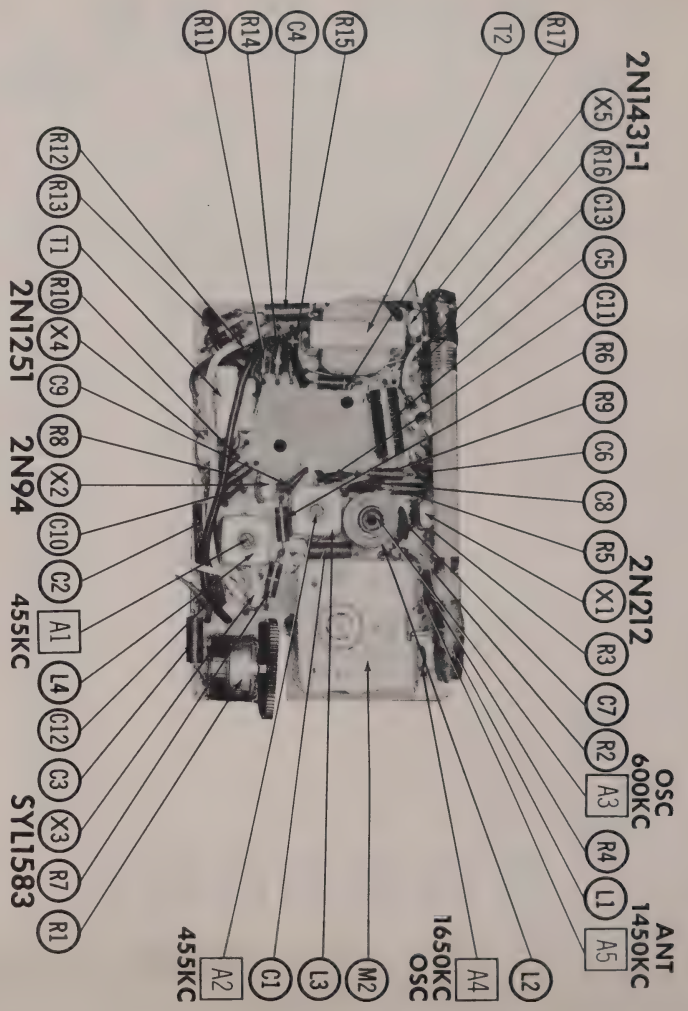
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	741-0087	Tuning, Models 5P16R, 5P16S, 5P16T
Knob	741-0077	Tuning, Models 2300, 2406, 2409, 2500, 2601, 2602, 2605, 2609, 2700, 2701, 2714
Knob	740-0347	Volume, Models 5P16R, 5P16S, 5P16T
Knob	740-0325	Volume, Models 2300, 2406, 2409, 2500, 2601, 2602, 2605, 2609, 2700, 2701, 2714
Handle	818-0264	Models 2500, 2601, 2602, 2605, 2609

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



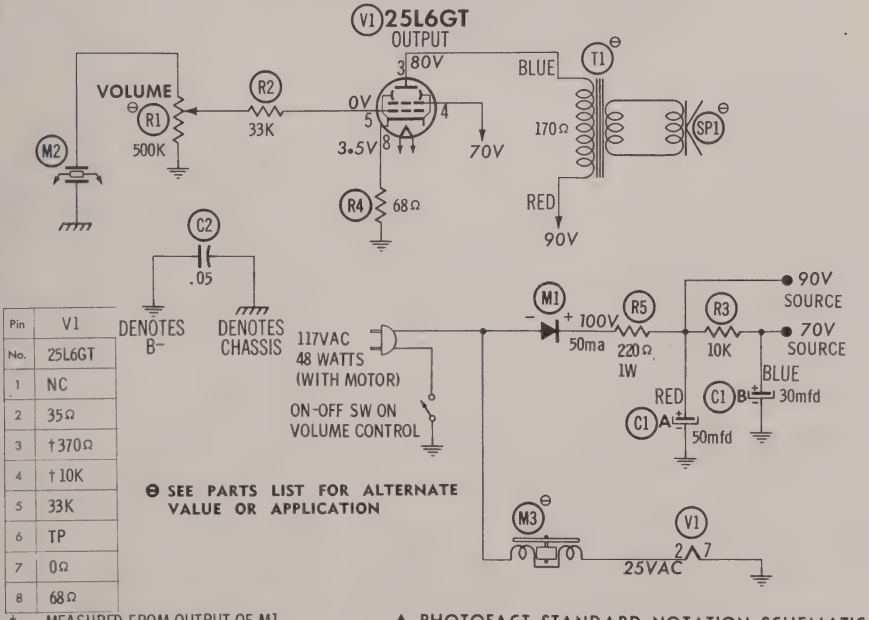
PHOTOFACT® Folder

SYMPHONIC MODELS 1500, 1600

SYMPHONIC
MODELS 1500, 1600

MODEL 1600

TRADE NAME	Symphonic Models 1500, 1600
MANUFACTURER	Symphonic Radio & Electronics Corp., 235 Jersey Ave., New Brunswick, N. J.
TYPE SET	AC Operated One Tube Phono Amplifier With 3 Speed Manual Record Player
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 48 Watts, .73 Amp. @117 Volts (With Motor)



Pin No.	V1 25L6GT
1	NC
2	35Ω
3	†370Ω
4	†10K
5	33K
6	TP
7	0Ω
8	68Ω

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION TP TIE POINT

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SYMPHONIC
MODELS 1500, 1600
SET 521 FOLDER 14

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	• GENERAL ELECTRIC •	RAYTHEON •	SYLVANIA •		
V1	Output	25L6GT			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SYMPHONIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	50	150	CE132	PRS2200	BBRD5315	TCD497	TDLD-8	TVA-2450	
B	30	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SYMPHONIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	VC-157	B-60-S	A47-500K-Z	Q13-133	U48	Volume, Note 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On

Note 1. Model 1500 uses Part #VC-139 (Refer to R1 for replacement data)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS	ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	33K				R4	68Ω			
R3	10K				R5	220Ω 1W			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SYMPHONIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	1900Ω	3-4Ω	TR-146 ①	A-3025	A-3332	24S53	S-12X	① Part #TR-109 used in Model 1500.

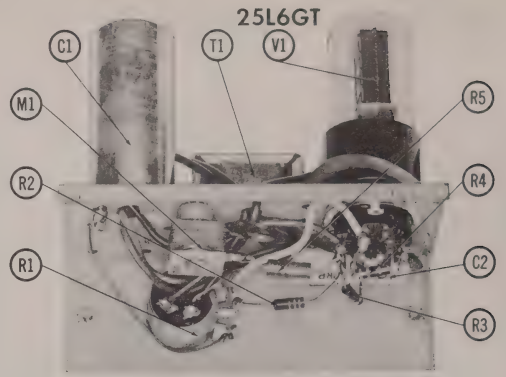
SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA SYMPHONIC PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	SP-402	4A07Z4	* Used in some versions of Model 1500.
	4"	PM		SP-409 *		

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA SYMPHONIC PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.050A	SR101 *	1N1763 ♦	65 *	SR200 ♦	* Selenium ♦ Silicon

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	SYMPHONIC PART No. CARTRIDGE	SYMPHONIC PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M2	DC-500	SA-100 * (LP) SA-250 * (STD)	124-TS or KR-314-T♦	N8-1 * N8-3 *					Model 1600. ♦ Includes Tone Arm.
	T-45 † or TO-45	LT45LP * (LP) & ST45ST * (78)	420-TS-TH KR-314-T♦	N8-1 * & N8-3 *	46T	Not Req.	12TH-S	Not Req.	Model 1500. ♦ Includes Tone Arm.

MISCELLANEOUS

ITEM No.	PART NAME	SYMPHONIC PART No.	NOTES
M3	Motor	MO103 (or)	3 Speed (Brown Knob)
	Motor	MO102	3 Speed (White Knob)
	Idler Wheel		WALSCO Part #1433

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	KN143	Gray
Knob	KN144	Mahogany

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

SYMPHONIC MODEL 1524

SYMPHONIC MODEL 1524

SYMPHONIC MODEL 1524

TRADE NAME	Symphonic Model 1524
MANUFACTURER	Symphonic Radio & Electronics, 235 Jersey Ave., New Brunswick, N. J.
TYPE SET	AC Operated 3 Tube Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 30 Watts, .3 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE V-M 1201 — PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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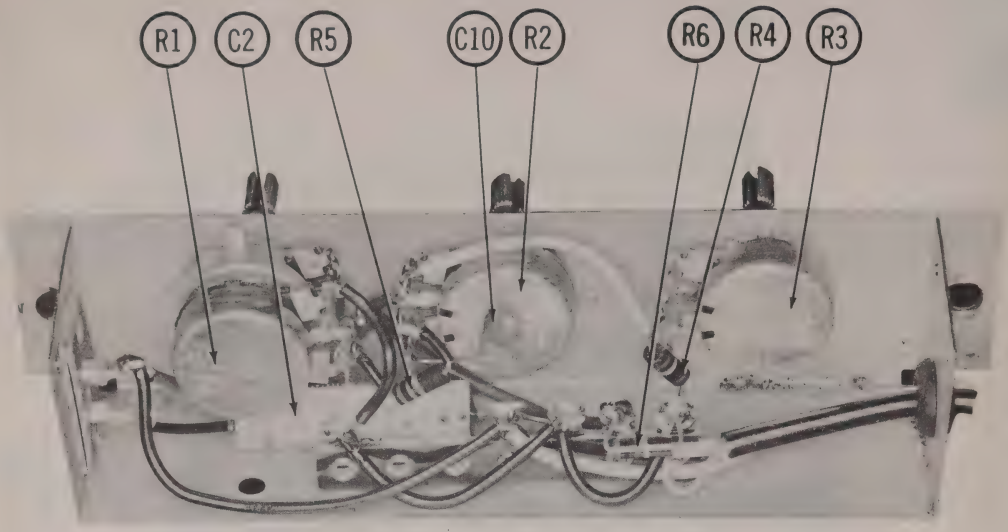
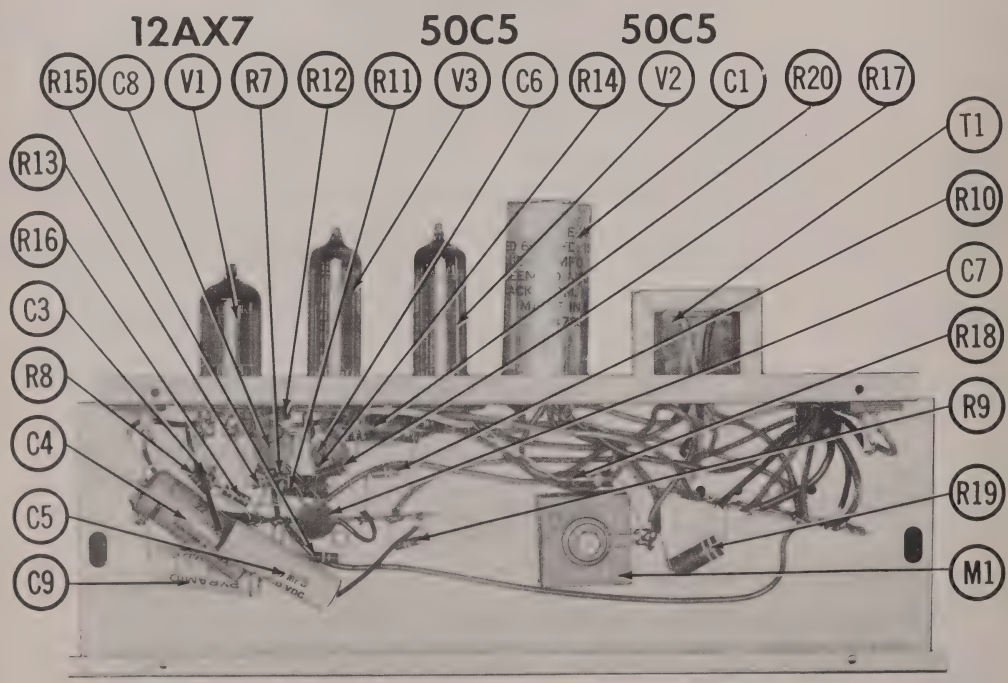
KS137

SET 521 FOLDER 15



CONTROL PANEL - REAR VIEW



CHASSIS - BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	AF Amp.-Phase Inv.	12AX7
V2	Output	50C5
V3	Output	50C5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SYMPHONIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	150	CE101	PRS3800	BBRT84215	TCT3119	TDLT-7	TVA-3455	
B	40	150							
C	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C3	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	5GA-T10
C4	.22 200V		P288N-22		CUB2P22	2DP-4-224	GEM-2022	2TM-P22
C5	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C6	10000		BPD-01	DD6-103	BYA10S1	CCD-103	GP110	5GA-S10
C7	10000		BPD-01	DD6-103	BYA10S1	CCD-103	GP110	5GA-S10
C8	10000		BPD-01	DD6-103	BYA10S1	CCD-103	GP110	5GA-S10
C9	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C10	680		BPD-00068	DD-681	L10T68	CCD-681	GP368	5GA-T68

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SYMPHONIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg	½	VC-272	B-85			FA36A	Loudness
B	3meg	½		SR-85			RU36A	(Not Used)
C	Shaft			Not Req.			CS3500	
R2A	500K	½	VC-163	B-59	A47-500K-S	Q11-133	U50	Treble
B	Shaft	*		Not Req.	KSS-3	Not Req.	Not Req.	
R3A	1meg	½	VC-119	B-70	A47-1meg-Z	Q13-137	U53	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R4	100K	(82K) *
R5	33K	
R6	1meg	
R7	220K	
R8	330Ω	
R9	10K	(8200Ω) *
R10	220K	
R11	100Ω 1W	
R12	6.8meg	
R13	220K	
R14	220K	
R15	220K	
R16	39K	
R17	3300Ω	
R18	2200Ω 1W	
R19	47Ω 2W	
R20	47Ω 2W	

* Alternate Value.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC. 1	IMPEDANCE SEC. 2	REPLACEMENT DATA SYMPHONIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	4000Ω CT	30Ω		TR-103					
		SEC. 2							
		6-8Ω							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA SYMPHONIC PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	SP-600	6A31	
SP2	6"	PM	3-4Ω	SP-600	6A31	

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA SYMPHONIC PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.075A	SR105 *	1N1763 ‡	100A *	SR200 ‡	* Selenium Type ‡ Silicon Type

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	SYMPHONIC PART No. CARTRIDGE	SYMPHONIC PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M2			13T	Not Req.	13	Not Req.	10T2-S	Not Req.	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

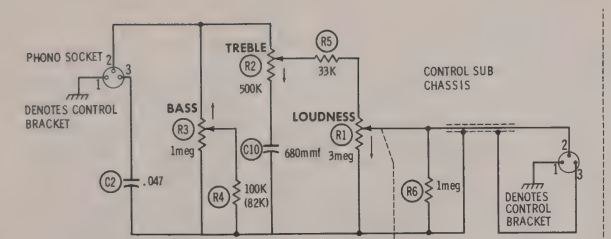
NAME	PART NO.	DESCRIPTION
Knob	KN223	Black With Chrome Insert, Loudness, Bass, Treble

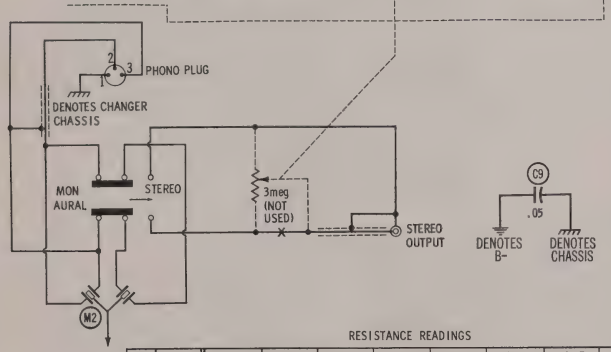
WIRING DATA

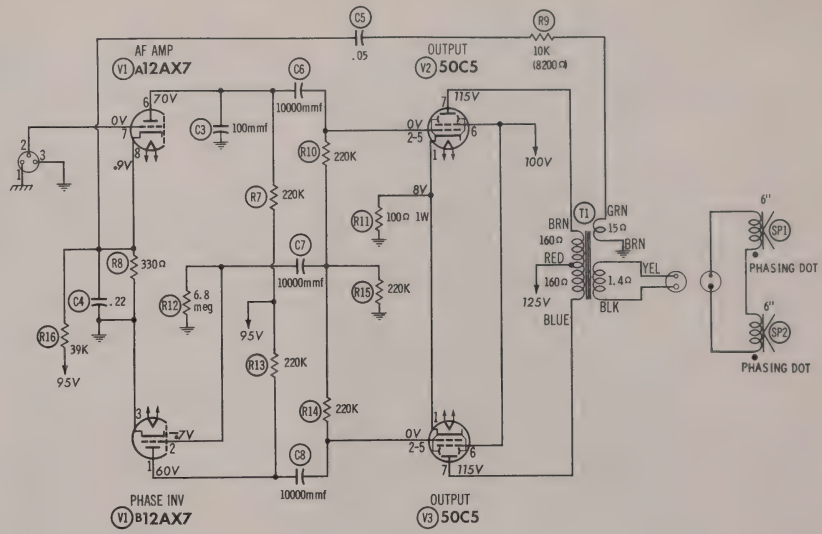
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)

SYMPHONIC MODEL 1524

FOLDER 15



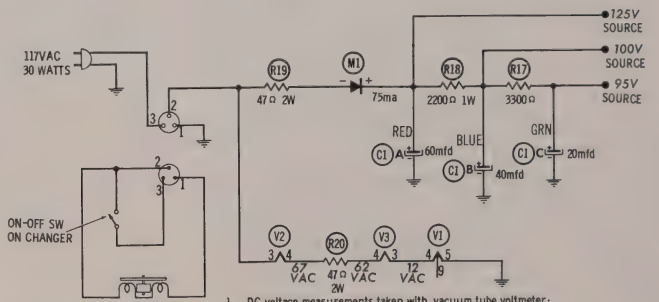




RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†225K	6.8meg	0Ω	15Ω	0Ω	†225K	INF	330Ω	NC
V2	50C5	100Ω	440K	145Ω	102Ω	NC	†2200Ω	†160Ω		
V3	50C5	100Ω	440K	15Ω	55Ω	440K	†2200Ω	†160Ω		

† MEASURED FROM OUTPUT OF M1. NC NO CONNECTION



DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15%In voltage and resistance readings.
6. All controls at minimum, proper output load connected.

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SYMPHONIC MODEL 1524

PHOTOFACT® Folder with CIRCUITRACE®

WESTINGHOUSE
CHASSIS V-2510-1, -2, V-2511-1

WESTINGHOUSE
CHASSIS V-2510-1, -2, V-2511-1

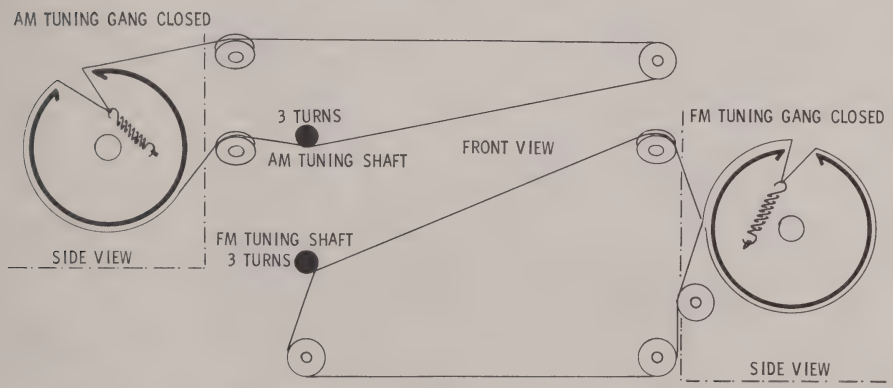
MODEL H-M1400

TRADE NAME	Westinghouse Models H-M1300, H-M1301, H-M1302, H-M1303 (Tuner Ch. V-2511-1, Amp. Ch. V-2510-1) H-M1400, H-M1401, H-M1402, H-M1403 (Tuner Ch. V-2511-1, Amp. Ch. V-2510-2)		
MANUFACTURER	Westinghouse Electric Corp., Radio- Television Div., Metuchen, N. J.		
TYPE SET	AC Operated 9 Tube FM-AM Tuner, 6 Tube Stereo Amplifier, And 4 Speed Automatic Record Changer		
POWER SUPPLY	105 - 120 Volts AC, 60 Cycles	RATING	180 Watts, 1.6 Amp. @117 Volts AC (Less Motor)
TUNING RANGES—BROADCAST	540 — 1600KC	FREQ. MOD.	88 — 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER PART #670V009H01 USED IN H-M1300 SERIES — SEE COLLARO CONQUEST (REVISED) — PHOTOFACT SET 408 FOLDER 6 OR RECORD CHANGER MANUAL RC-11

FOR SERVICE INFORMATION ON RECORD CHANGER PART #670V010H01 USED IN H-M1400 SERIES — SEE V-M 1201 — PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12

DIAL CORD STRINGING



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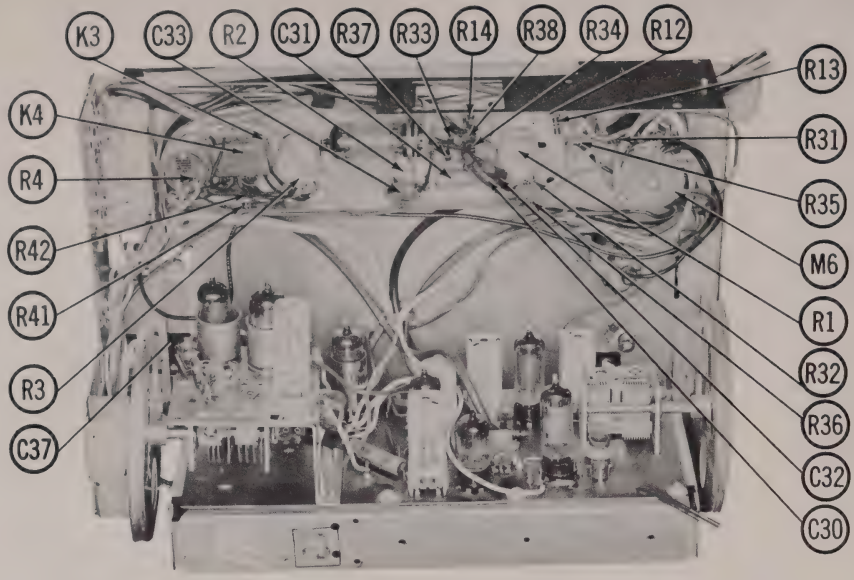
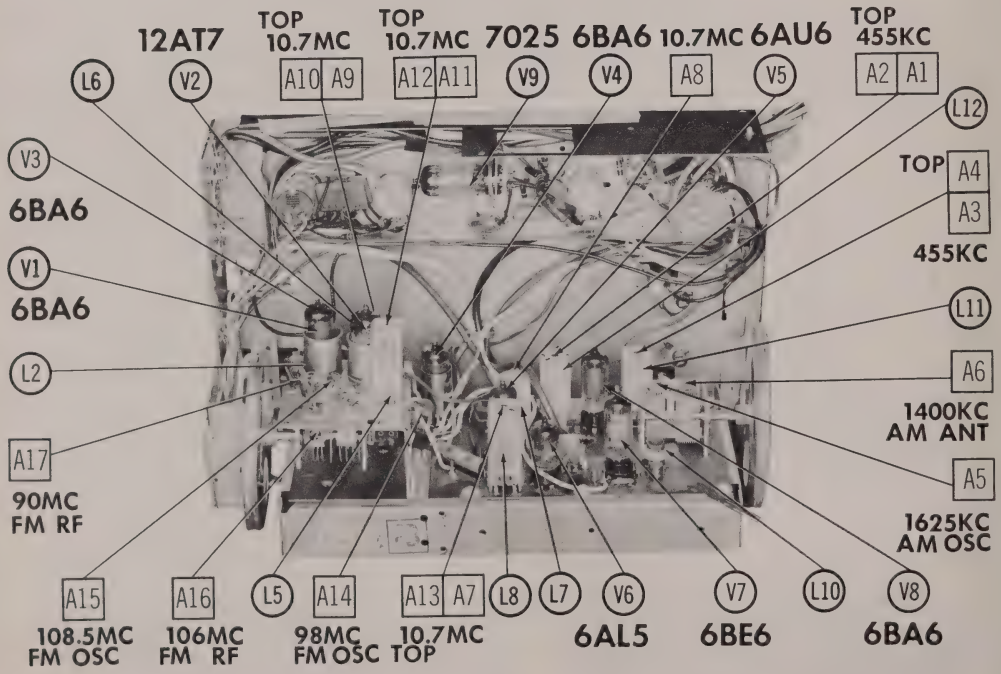
SET 521 FOLDER 16



CHASSIS-TOP VIEW



CHASSIS-TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT		
Use only enough generator output to provide a usable indication.		
Suggested Alignment Tools:	A1 thru A4.....	GENERAL CEMENT #5097, 8727 WALSCO #2515
	A5, A6, A15, A16.....	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
	A7 thru A14, A17.....	GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 WALSCO #2526, 2543, 2544, 2545

AM ALIGNMENT—SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru 200mmf to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ 30% AM Mod.)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	1625KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1400KC	1400KC Signal.	"	A6	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .01mfd to tab (Fig. 1) on FM Mixer. Low side to chassis.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A7, A8, A9, A10, A11, A12	Adjust for maximum deflection.
5.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru .01mfd to tab (Fig. 1). Low side to chassis.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. Amp. to point Ⓐ. Low side to chassis.	A7, A8, A9, A10, A11, A12	Disconnect Stabilizing Capacitor C1. Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. Reconnect C1.
5.	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A13	Adjust to place marker at the center of crossover lines similar to Fig. 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
6.	Across antenna terminals thru dummy (Fig. 4).	98MC (Unmod.)	(FM) 98MC	DC probe to point Ⓐ. Common to chassis.	A14	Adjust for maximum deflection.
7.	"	108.5MC	FM tuning gang fully open.	"	A15	"
8.	"	87.5MC	FM Tuning gang fully closed.	"		Retouch A14 for maximum deflection. Repeat Steps 7 & 8.
9.	"	106MC	106MC	"	A16	Adjust for maximum deflection.
10	"	90MC	90MC	"	A17	Adjust for maximum output while rocking tuning gang.

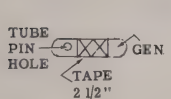


FIG. 1

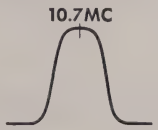


FIG. 2

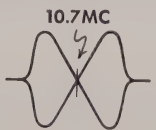
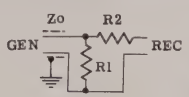
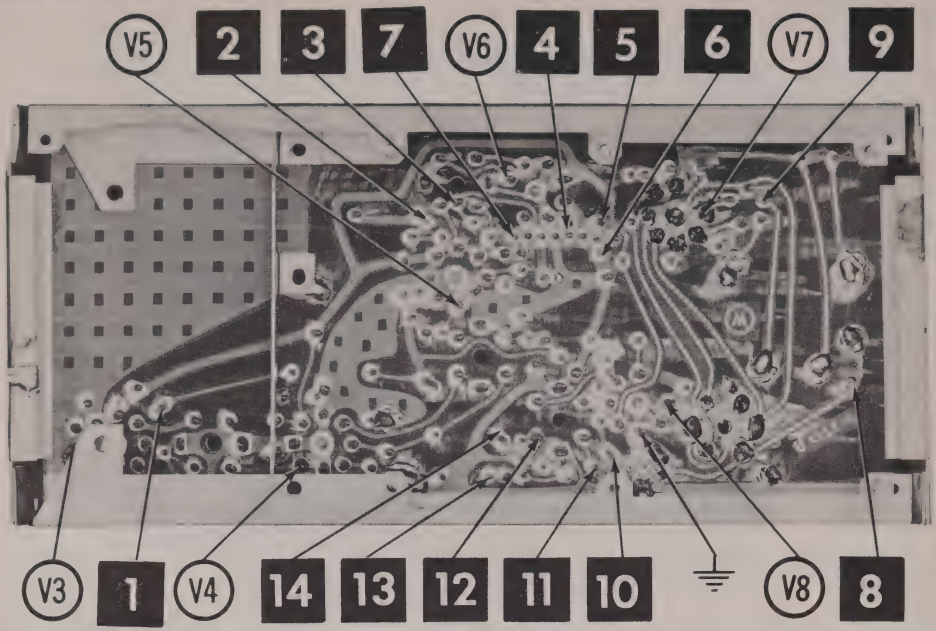


FIG. 3



Zo	R1	R2
52Ω	56Ω	270Ω
72Ω	85Ω	220Ω

FIG. 4



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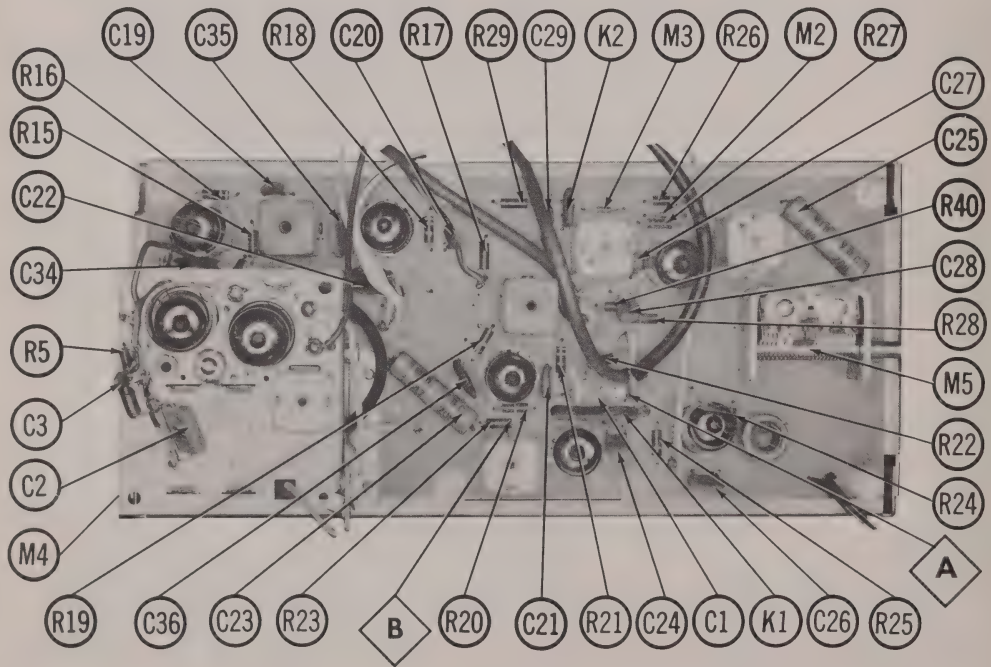
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



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TUNER PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

• GENERAL ELECTRIC •		• RAYTHEON • SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amplifier	6BA6	V6	Ratio Detector	6AL5
V2	FM Mixer-FM Osc.	12AT7	V7	AM Converter	6BE6
V3	1st FM IF Amplifier	6BA6	V8	AM IF Amplifier	6BA6
V4	2nd FM IF Amplifier	6BA6	V9	Left Channel Preamp. - Right Channel Preamp.	7025
V5	FM Limiter	6AU6			

ELECTROLYTIC CAPACITORS

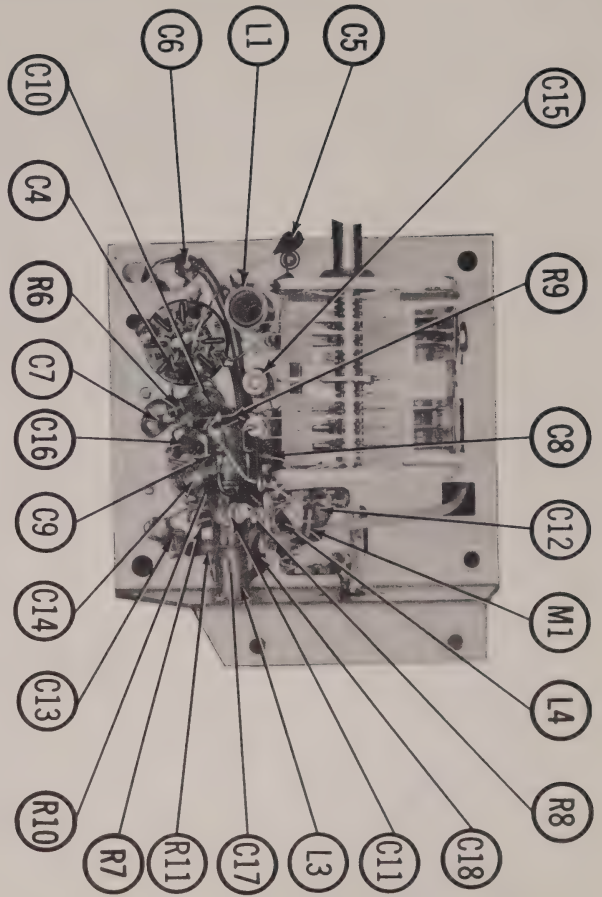
ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Westinghouse PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	4	50	218V012H13	PWE50008	NLW5-50	TT50X4	ML4-50	TE-1302.1	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	10		1468-00001	TCZ-10	22R5Q1	CM-19B-100M	MC215	1FM-41
C3	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C4	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C5	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C6	1500		EF-0015			CCF-152	FC5215	
C7	1500		EF-0015			CCF-152	FC5215	
C8	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C9	1 10%		NPO-SI 1.0	TCZ-1			CNO-510	10TCC-V10
C10	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C11	4.7 N470							
C12	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C13	1500		EF-0015			CCF-152	FC5215	
C14	2.7 N750							
C15	1.5-6			829-6		CV-3	CT552	
C16	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C17	1500		EF-0015			CCF-152	FC5215	
C18	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C19	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C20	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C21	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	10TS-D47
C22	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C23	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C24	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C25	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C26	4700		BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C27	3.3 NPO		NPO-DI 3.3	DTZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C28	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C29	2200		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C30	.15 200V		P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C31	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C32	.15 200V		P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C33	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C37	.033 600V		P688N-033	DD-303	CUB6S33	6DP-3-333	GEM-6133	6TM-S33

FM RF SUBCHASSIS



TUNER PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Westinghouse PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg		270V089H01	B-70	AD47-1meg-Z		FA16A	Loudness, Left Channel
B	1meg			SR-70	Not Req.		RU16A	Loudness, Right Channel
C	Shaft			Not Req.	FS-3		CS3500	
R2A	1meg		270V089H02	B-744			FA16A	Balance, Left Channel
B	1meg			SR-68			RU16R	Balance, Right Channel
C	Shaft			Not Req.			CS3500	
R3A	1meg		270V089H03	B-69	AD47-1meg-Z		FA16L	Bass, Left Channel
B	1meg			SR-69	Not Req.		RU16L	Bass, Right Channel
C	Shaft			Not Req.	FS-3		CS-3500	
R4A	1meg		270V082H02	TPL-104				Treble, Left Channel
B	1meg			Not Req.			UE4183-S	Treble, Right Channel
C	Shaft			Not Req.				
D	Switch			Not Req.				Push-Pull-Off-On

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R5	4.7meg	
R6	680Ω	
R7	3.3meg	
R8	680Ω	
R9	10K	
R10	680Ω	
R11	1meg	
R12	2.2meg	
R13	220K	
R14	470K	
R15	1000Ω	
R16	68Ω	

ITEM No.	RATING	REMARKS
R17	1000Ω	
R18	68Ω	
R19	100K	
R20	22K	
R21	68Ω	
R22	10K	
R23	1meg	
R24	22K	
R25	1500Ω	
R26	3.3meg	
R27	3.3meg	
R28	100Ω	

ITEM No.	RATING	REMARKS
R29	1meg	
R30	22K	
R31	680K	
R32	270K	
R33	10meg	
R34	270K	
R35	680K	
R36	270K	
R37	10meg	
R38	270K	
R39	470K	
R40	1000Ω	
R41	100K	
R42	100K	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		Westinghouse PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	
L1	FM Ant. Coil	230V065H01				
L2	FM RF Coil	230V045H01				
L3	FM Osc. Coil	230V045H02				
L4	RF Choke	230V056H17 ①				
L5	1st FM IF Trans.	235V039H03	FM-254	1463	RTC-8599	
L6	2nd FM IF Trans.	235V059H01	FM-256	1463-PC	RTC-9046	
L7	FM Limiter Trans.	235V060H01				
L8	Ratio Detector	235V061H01				
L9	Loopstick	310V055H01	BC-419	705-A		
L10	AM Osc. Coil	230V040H04				
L11	1st AM IF Trans.	235V053H03 ②	BC-356	13-PC1	RTC-8641	
L12	2nd AM IF Trans.	235V053H04 ②	BC-357	13-PC2	RTC-8642	

① Wound on 1000Ω Resistor.
② Alternate Part #235V023H11.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Westinghouse PART No.	REPLACEMENT DATA
K1	Ratio Detector Comp.	300mmf, 300mmf, 300mmf, 1000mmf, 68Ω, 1000Ω, 1500Ω, 6800Ω, 6800Ω, 68K	219V036H01	Aerovox PA-694 Centralab PC-342
K2	AM Diode RF Filter	100mmf, 100mmf, 47K	219V022H03	Aerovox PA-97 Centralab PC-50 Cornell-Dubilier 111TM1 Sprague D-1
K3	Tone Comp.	1000mmf, 2200mmf, 2200mmf, 22000mmf, 10K, 150K	219V021H01	
K4	Tone Comp.	1000mmf, 2200mmf, 2200mmf, 22000mmf, 10K, 150K	219V021H01	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		Westinghouse PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M1		296V008H01		1N87	1N87	FM AFC (Pigtail)
M2	1N60	296V002H06		1N60	1N60	AM AVC (Pigtail)
M3	1N60	296V002H06		1N60	1N60	AM Detector (Pigtail)

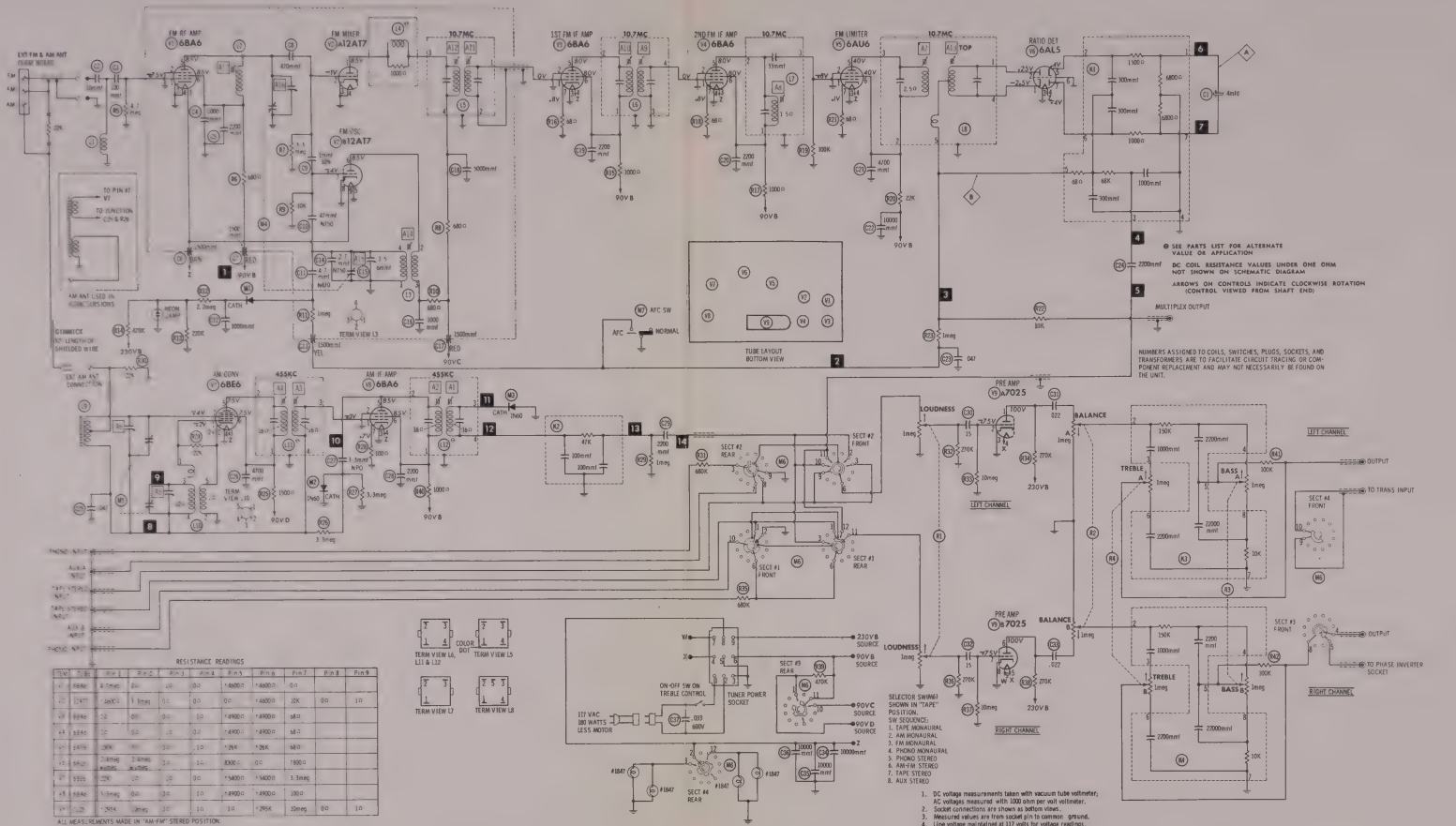
MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M4	Tuning Gang		FM
M5	Tuning Gang		AM
M6	Switch	756V048H01	Selector (Rotary Wafer Type)
M7	Switch	778V189H01	AFC Off-On (Slide Type SPDT)

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	Westinghouse PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M8	571V009H01†		13TBX	Not Req.	26SD	Not Req.	8TA4-SD	N-8TA-SD *	† Used in Models H-M1400 Series.
	571V001H02‡		13T	Not Req.	13	Not Req.	8TA4-S	N-8TA-S *	‡ Used in Models H-M1300 Series.


FM RF AMP V1 6BA6
FM MIXER V2 12AT7
FM OSC V3 12AT7
10.7MC
1ST FM IF AMP V4 6BA6
2ND FM IF AMP V5 6BA6
FM LIMITER V6 6AU6
RATIO DET V16 6AL5
AM CONV V7 6BE6
AM IF AMP V8 6BA6
455KC
PRE AMP V9 A7025
TUBE LAYOUT BOTTOM VIEW
AFC NORMAL
LOUDNESS
BALANCE
TREBLE
BASS
LEFT CHANNEL
RIGHT CHANNEL
MULTIPLEX OUTPUT
TO TRANS INPUT
TO PHASE INVERTER SOCKET
SECT #1 FRONT
SECT #1 REAR
SECT #2 FRONT
SECT #2 REAR
SECT #3 FRONT
SECT #3 REAR
SECT #4 FRONT
SECT #4 REAR
TUNER POWER SOCKET
ON-OFF SW ON TREBLE CONTROL
117 VAC 180 WATTS LESS MOTOR
SELECTOR SW#61 SHOWN IN "TAPE" POSITION.
SW SEQUENCE:
1. TAPE MONAURAL
2. AM MONAURAL
3. FM MONAURAL
4. PHONO MONAURAL
5. PHONO STEREO
6. AM-FM STEREO
7. TAPE STEREO
8. AUX STEREO
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
TERM VIEW L1 & L2
TERM VIEW L5
TERM VIEW L7
TERM VIEW L8
COLOR DOT
RESISTANCE READINGS
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.
ALL MEASUREMENTS MADE IN "AM-FM" STEREO POSITION.
MEASURED WITH "FM AFC" SW (#57) IN AFC POSITION.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
CIRCUITRACE
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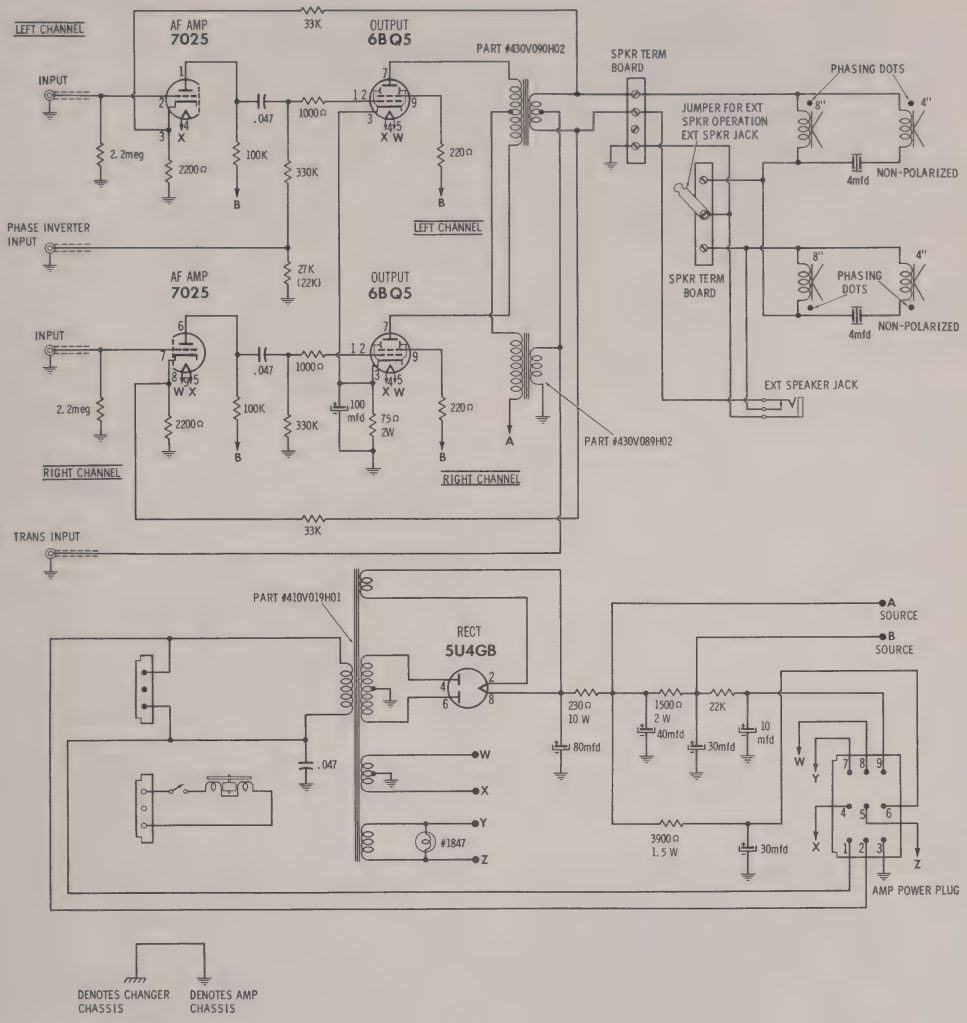
WESTINGHOUSE
CHASSIS V-2510-1, -2, V-2511-1

SET 521 FOLDER 16 PAGE 7 PAGE 8



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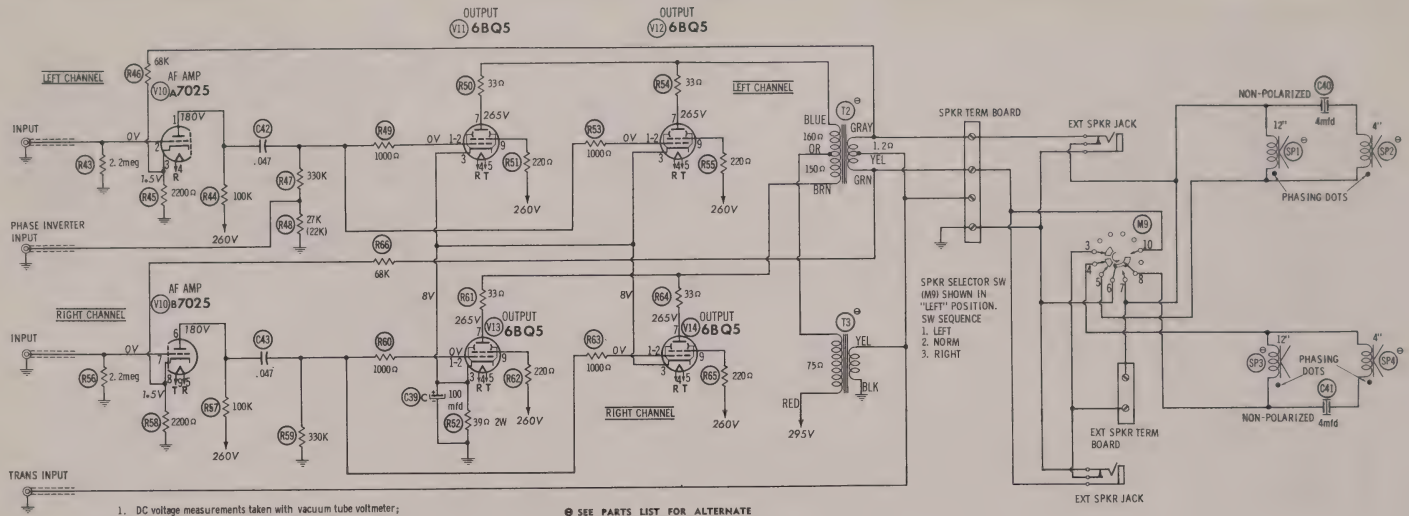
WESTINGHOUSE
CHASSIS V-2510-1, -2, V-2511-1



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Proper output load connected.

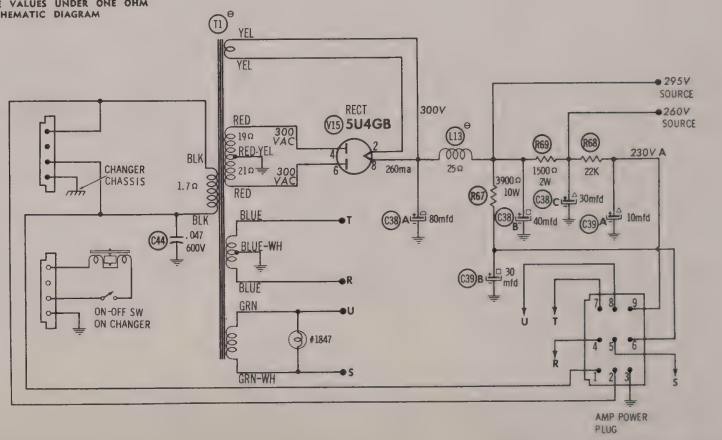
RESISTANCE READINGS (Cont.)

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V10	7025	↑100K	2.2meg	2200Ω	.1Ω	.1Ω	↑100K	2.2meg	2200Ω	.1Ω
V11	6BQ5	NC	360K	39Ω	.1Ω	.1Ω	NC	↑290Ω	NC	↑1700Ω
V12	6BQ5	NC	360K	39Ω	.1Ω	.1Ω	NC	↑290Ω	NC	↑1700Ω
V13	6BQ5	NC	330K	39Ω	.1Ω	.1Ω	NC	↑280Ω	NC	↑1700Ω
V14	6BQ5	NC	330K	39Ω	.1Ω	.1Ω	NC	↑280Ω	NC	↑1700Ω
V15	5U4GB	NC	¶	NC	19Ω	NC	21Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
↑ MEASURED FROM PIN 8 OF V15. NC NO CONNECTION

Ⓔ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM



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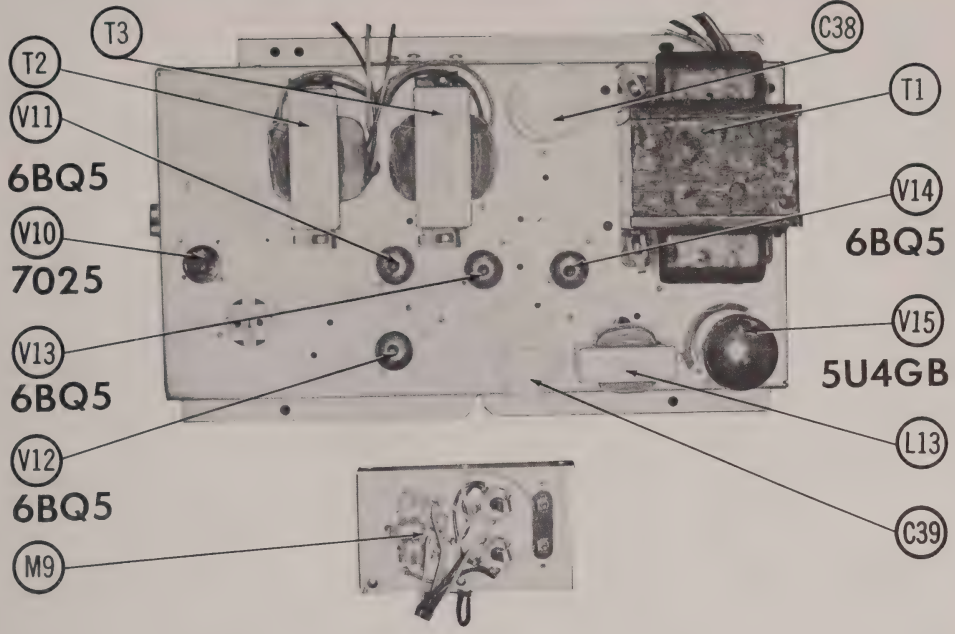
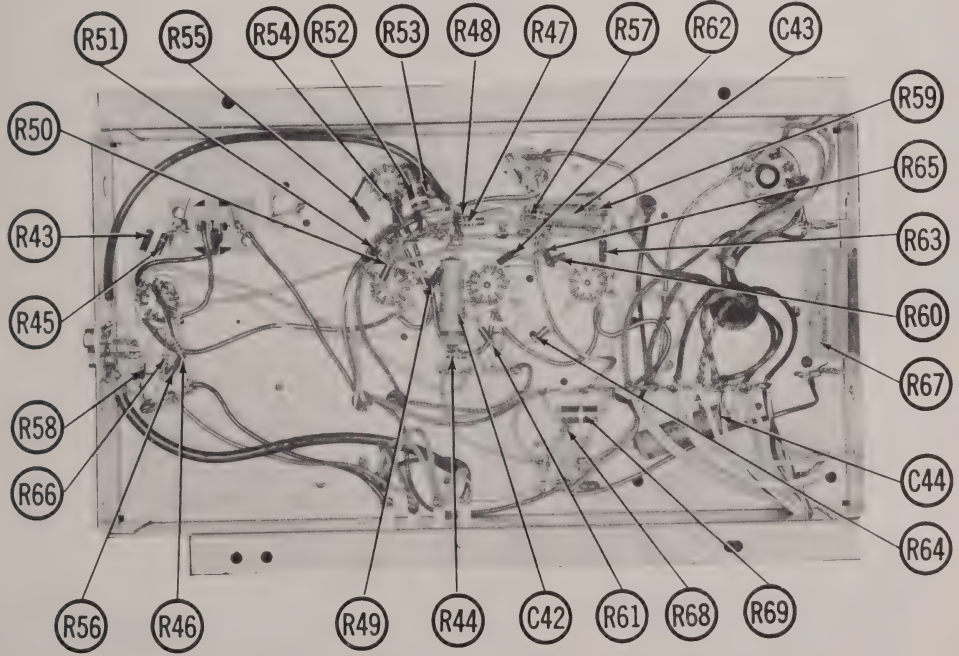
CHASSIS V-2510-1, -2, V-2511-1



AMP CHASSIS - TOP VIEW



AMP CHASSIS - BOTTOM VIEW

AMP PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •)
V10	Left Channel AF Amp. - Right Channel AF Amp.	7025
V11	Left Channel Output	6BQ5
V12	Left Channel Output	6BQ5
V13	Right Channel Output	6BQ5
V14	Right Channel Output	6BQ5
V15	Rectifier	5U4GB

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Westinghouse PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C38A	▲80	400	218V037H08	AFH3-46	C0370	FP378	TMT3763	TVL-3793	
B	■40	400							
C	▲30	400							
C39A	▲10	300	218V037H07	AFH3-112-20	C1150	FP259	TMD-2380	TVL-2663	
B	■30	350				TC2501	TD-100-25	TVA-1207	
C	100	25							
C40	4	50NP	218V025H19	PRS7405	BBR4-150	TCN504		TVANS-4302.5*	
C41	4	50NP	218V025H19	PRS7405	BBR4-150	TCN504		TVANS-4302.5*	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C42	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C43	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C44	.047 600V		P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

RESISTORS (IRC or EQUIVALENT)

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R43	2.2meg	
R44	100K	
R45	2200Ω	
R46	68K	
R47	330K	
R48	27K	(22K) *
R49	1000Ω	
R50	33Ω	
R51	220Ω	
R52	39Ω 2W	

ITEM No.	RATING	REMARKS
R53	1000Ω	
R54	33Ω	
R55	220Ω	
R56	2.2meg	
R57	100K	
R58	2200Ω	
R59	330K	
R60	1000Ω	
R61	33Ω	
R62	220Ω	

ITEM No.	RATING	REMARKS
R63	1000Ω	
R64	33Ω	
R65	220Ω	
R66	68K	
R67	3900Ω 10W	IRC#PW10-3.9KΩ
R68	22K	
R69	1500Ω 2W	

* Alternate Value.

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA Westinghouse PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L13	.260A	25Ω	.5HY	430V064H01 ①		C-2343		C-27X	① Used in Models H-M1400 Series.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA Westinghouse PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V ⓐ 1.6A	600VCT ⓐ .260A	5V ⓐ 3A	410V017H01 ①					① Part #410V016H01 used in H-M1300 Series.
	SEC. 3	SEC. 4	SEC. 5						
	6.3VCT ⓐ 3.6A	6.3V ⓐ 2.7A							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Westinghouse PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	3000Ω	6-8Ω	430V093H01 ①					① Part #430V089H02 used in Models H-M1300 Series.
T3	6200Ω CT	12-16Ω CT	430V094H01 ②					② Part #430V090H02 used in Models H-M1300 Series.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Westinghouse PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	12"	PM	6-8Ω	570V072H01 *	12A6AZ6.6	* Not used in Models H-M1300 Series.
SP2	4"	PM	6-8Ω	570V071H01 ‡	4AIZ6.1	‡ Replaces SP1 & SP2 in Models H-M1300 Series.
SP3	12"	PM	6-8Ω	570V072H01 *	12A6AZ6.6	
SP4	4"	PM	6-8Ω	570V071H01 ‡	4AIZ6.1	
	8"	PM		570V076H01 ‡		

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M9	Switch	756V046H01	Speaker Selector (Rotary Wafer) Ch. V-2510-2

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Glass	558V267H01	
Dial Assembly	559V079H02	With Scale
Knob	550V135H01	Tuning, AM, FM
Knob	559V070H02	Bottom; Balance, Bass, Treble (1400 Series), Balance only (1300 Series)
Knob	559V071H01	Bottom; Loudness (1400 Series), Treble, Bass, Loudness (1300 Series)
Knob	550V114H04	Top; Loudness, Bass, Treble, Balance
Knob	550V137H01	Function Selector
Cabinet	516V136H01	Walnut, Model H-M1400
Cabinet	516V139H01	Mahogany, Model H-M1401
Cabinet	516V118H01	Cherry Provincial, Model H-M1402
Cabinet	516V114H01	Cherry Colonial, Model H-M1403
Cabinet	516V113H01	Walnut, Model H-M1300
Cabinet	516V113H02	Mahogany, Model H-M1301
Cabinet	516V113H03	Limed Oak, Model H-M1302
Cabinet	516V113H04	Fruitwood, Model H-M1303
Leg	518V001H25	Model H-M1300
Leg	518V001H31	Model H-M1301
Leg	518V001H24	Model H-M1302
Leg	518V001H26	Model H-M1303

WIRING DATA

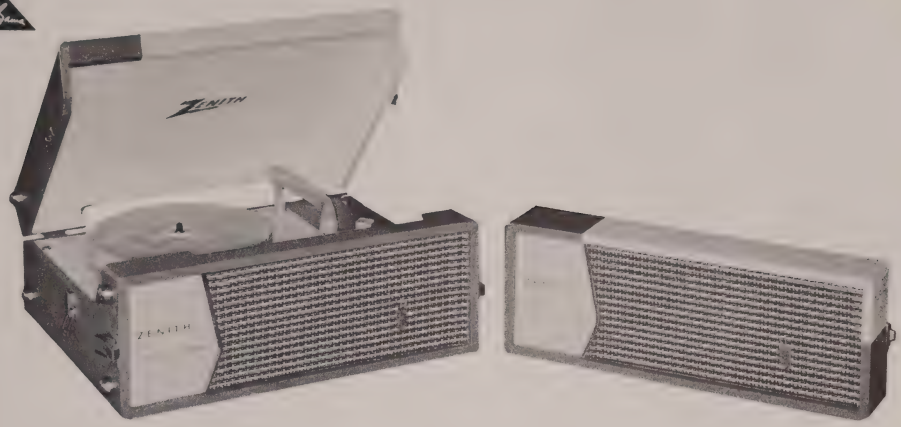
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

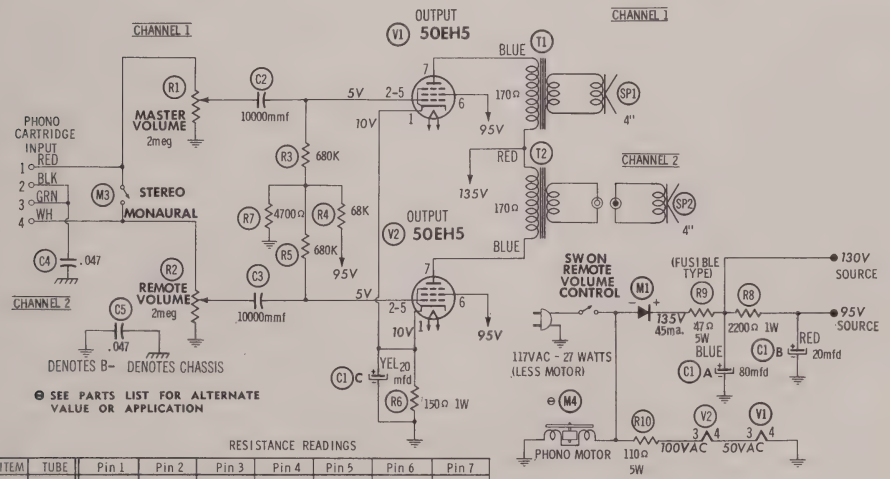
PHOTOFACT® Folder

ZENITH
MODEL DPS-30F

ZENITH
MODEL DPS-30F



TRADE NAME	Zenith Model DPS-30F
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Illinois
TYPE SET	AC Operated 2 Tube Stereo Amplifier With 4 Speed Manual Record Player
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 27 Watts, .28 Amp. @ 117 Volts AC (Less Motor)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	50EH5	150Ω	685K	150Ω	0Ω	NC	†2200Ω	†220Ω
V2	50EH5	150Ω	NC	300Ω	150Ω	685K	†2200Ω	†220Ω

† MEASURED FROM OUTPUT OF M1. NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KR273

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SET 521 FOLDER 17

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆)
V1	Channel 1 Output	50EH5
V2	Channel 2 Output	50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	80	150	WC12145	PRS4650	BBRT8415C	WQ230	TDLT-7	TVA-3455	
B	20	150							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C3	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C4	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C5	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg	½	▼C13786	B-76	A47-2meg-Z	Q13-139	U55	Master Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	2meg	½	WC13069	B-76	A47-2meg-Z	Q13-139	U55	Remote Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KR-6	SWE-12	76-1	US-26T	Power Off-On

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	680K			
R4	68K			
R5	680K			
R6	150Ω 1W			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R7	4700Ω			
R8	2200Ω 1W			
R9	47Ω 5W			
R10	110Ω 5W			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2000Ω	3-4Ω	(Part of SP1)	A-3025	A-3332	24S48	S-12X	
T2	2400Ω	3-4Ω	WC13706	A-3025	A-3332	24S48	S-12X	

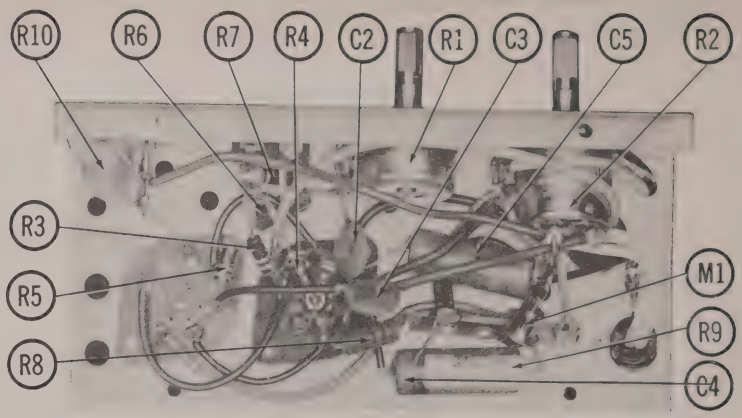
SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA ZENITH PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	WC13969 *	4A07	* Includes T1
SP2	4"	PM	3-4Ω	WC11792	4A07	

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA ZENITH PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.045A	WC14027 *	1N1763 *	2F4 *	SR200 *	* Silicon Type

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA ZENITH PART No. CARTRIDGE	ZENITH PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M2	142-101 †	56-417 * or 56-421B * (LP)	76-TS-TB ♦ K74-T ♦	N8-1 * & N8-3 *					† Includes Needles ♦ Includes Tone Arm
		56-418 * or 56-422B * (STD)							

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M3	Switch	WC13970	Stereo-Mono (Rotary Type)
M4	Motor	WC13745-8	(Alliance)
	Motor	WC13746-8	(GI)
	Idler Wheel		WALSCO Part No. 1433

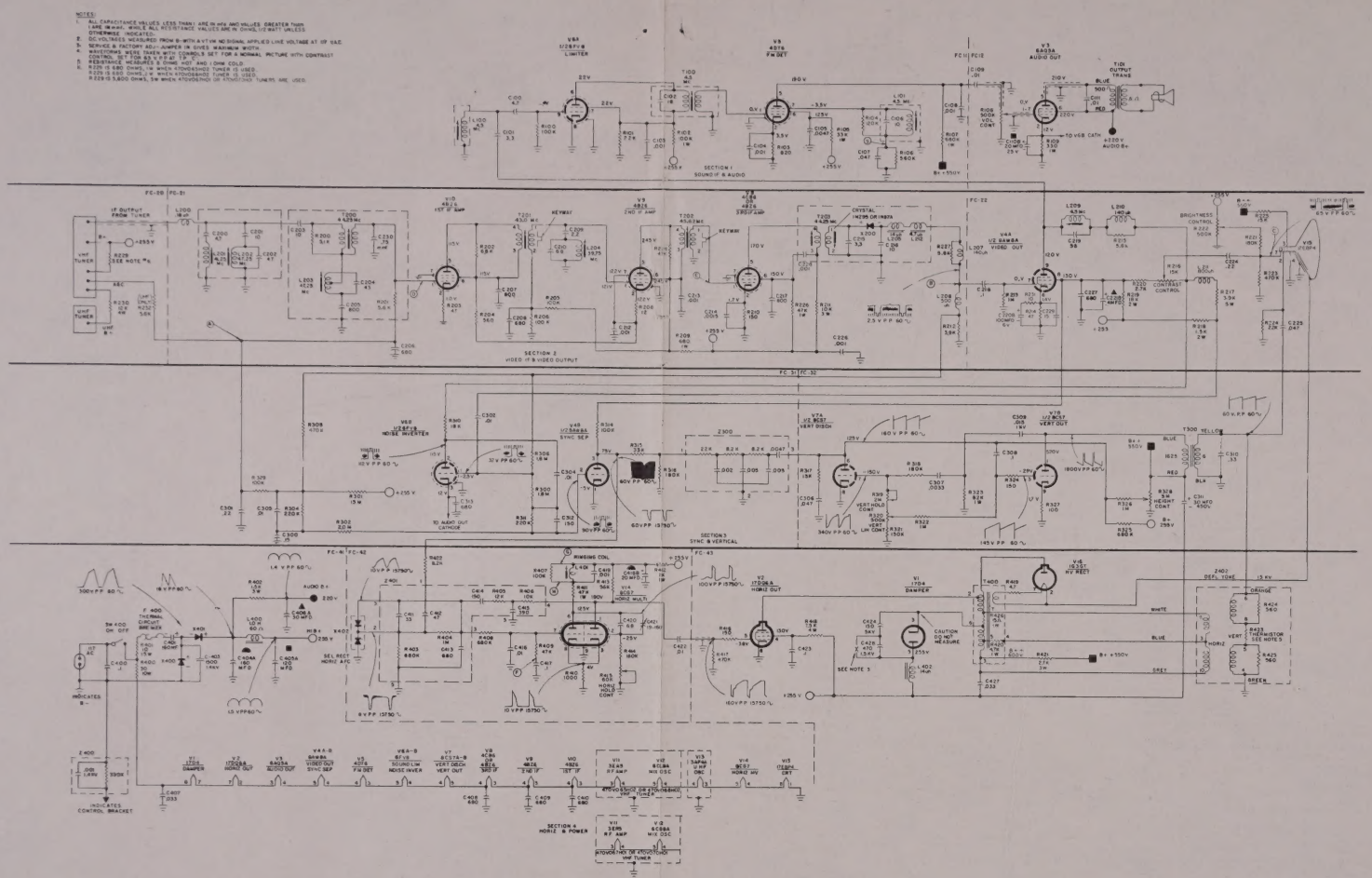
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	WC12126-8E	Volume, Selector
Cabinet	WC13960	Master & Remote
Handle	WC13688-6B	Includes Two Plates

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)



WESTINGHOUSE MODELS HP-3150, U, HP-3210, U, HP-3211, U (CH. V-2384-5, -6, -14, -15)

Schematic Diagram Courtesy of Westinghouse Electric Corporation

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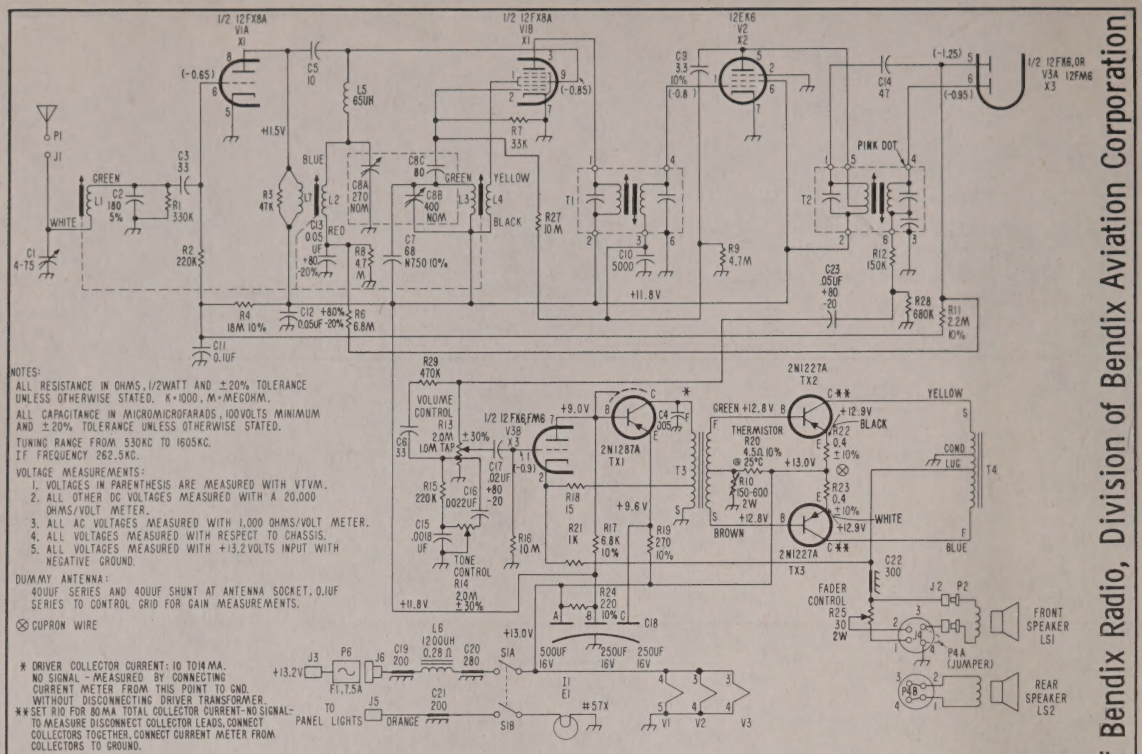


NOTES:
ALL RESISTANCE IN OHMS, 1/2WATT AND ±20% TOLERANCE UNLESS OTHERWISE STATED. K=1000, M=MEGOHM.

ALL CAPACITANCE IN MICROMICROFARADS, 100VOLTS MINIMUM AND ±20% TOLERANCE UNLESS OTHERWISE STATED.

TUNING RANGE FROM 530KC TO 1605KC.
IF FREQUENCY 262.5KC.

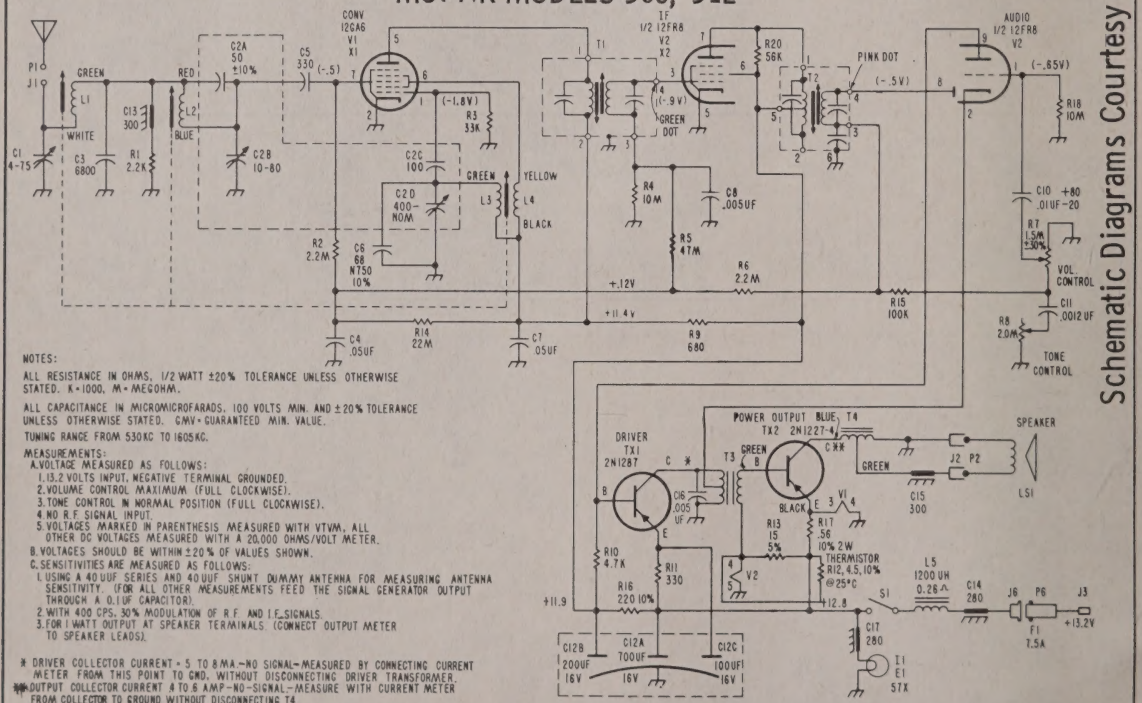
VOLTAGE MEASUREMENTS:
1. VOLTAGES IN PARENTHESIS ARE MEASURED WITH VTVM.
2. ALL OTHER DC VOLTAGES MEASURED WITH A 20,000 OHMS/VOLT METER.
3. ALL AC VOLTAGES MEASURED WITH 1,000 OHMS/VOLT METER.
4. ALL VOLTAGES MEASURED WITH RESPECT TO CHASSIS.
5. ALL VOLTAGES MEASURED WITH +13.2 VOLTS INPUT WITH NEGATIVE GROUND.

DUMMY ANTENNA:
40UUF SERIES AND 400UUF SHUNT AT ANTENNA SOCKET, 0.1UF SERIES TO CONTROL GRID FOR GAIN MEASUREMENTS.

⊗ CUPRON WIRE

* DRIVER COLLECTOR CURRENT: 10 TO 14 MA. NO SIGNAL - MEASURED BY CONNECTING CURRENT METER FROM THIS POINT TO GND. WITHOUT DISCONNECTING DRIVER TRANSFORMER.
** SET R10 FOR 80 MA TOTAL COLLECTOR CURRENT - NO SIGNAL - TO MEASURE DISCONNECT COLLECTOR LEADS, CONNECT COLLECTORS TOGETHER, CONNECT CURRENT METER FROM COLLECTORS TO GROUND.

MOPAR MODELS 306, 312



NOTES:
ALL RESISTANCE IN OHMS, 1/2 WATT ±20% TOLERANCE UNLESS OTHERWISE STATED. K=1000, M=MEGOHM.

ALL CAPACITANCE IN MICROMICROFARADS, 100 VOLTS MIN. AND ±20% TOLERANCE UNLESS OTHERWISE STATED. GMV=GUARANTEED MIN. VALUE.

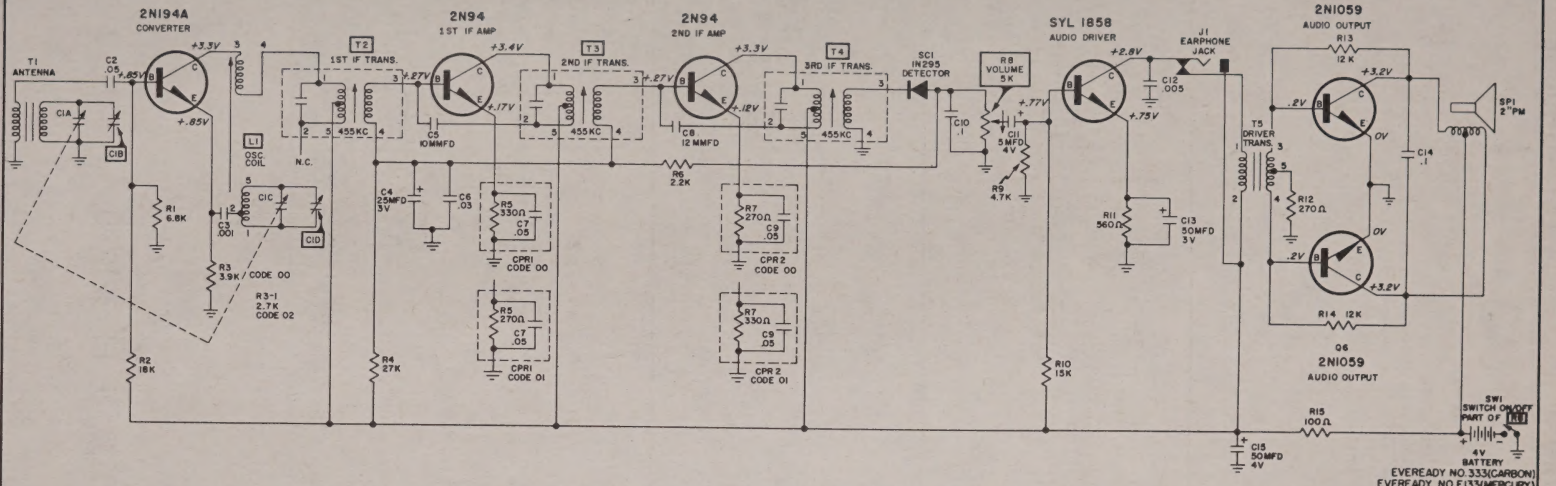
TUNING RANGE FROM 530KC TO 1605KC.

MEASUREMENTS:
A. VOLTAGE MEASURED AS FOLLOWS:
1. 13.2 VOLTS INPUT, NEGATIVE TERMINAL GROUNDED.
2. VOLUME CONTROL MAXIMUM (FULL CLOCKWISE).
3. TONE CONTROL IN NORMAL POSITION (FULL CLOCKWISE).
4. NO R.F. SIGNAL INPUT.
5. VOLTAGES MARKED IN PARENTHESIS MEASURED WITH VTVM, ALL OTHER DC VOLTAGES MEASURED WITH A 20,000 OHMS/VOLT METER.
B. VOLTAGES SHOULD BE WITHIN ±20% OF VALUES SHOWN.
C. SENSITIVITIES ARE MEASURED AS FOLLOWS:
1. USING A 40 UUF SERIES AND 40 UUF SHUNT DUMMY ANTENNA FOR MEASURING ANTENNA SENSITIVITY. (FOR ALL OTHER MEASUREMENTS FEED THE SIGNAL GENERATOR OUTPUT THROUGH A 0.1 UF CAPACITOR).
2. WITH 400 CPS, 30% MODULATION OF R.F. AND I.F. SIGNALS.
3. FOR 1 WATT OUTPUT AT SPEAKER TERMINALS. (CONNECT OUTPUT METER TO SPEAKER LEADS).

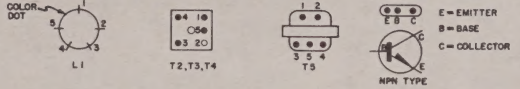
* DRIVER COLLECTOR CURRENT = 5 TO 8 MA. - NO SIGNAL - MEASURED BY CONNECTING CURRENT METER FROM THIS POINT TO GND. WITHOUT DISCONNECTING DRIVER TRANSFORMER.
** OUTPUT COLLECTOR CURRENT 4 TO 6 AMP - NO-SIGNAL - MEASURE WITH CURRENT METER FROM COLLECTOR TO GROUND WITHOUT DISCONNECTING T4.

MOPAR MODEL 107

Schematic Diagrams Courtesy of Bendix Radio, Division of Bendix Aviation Corporation



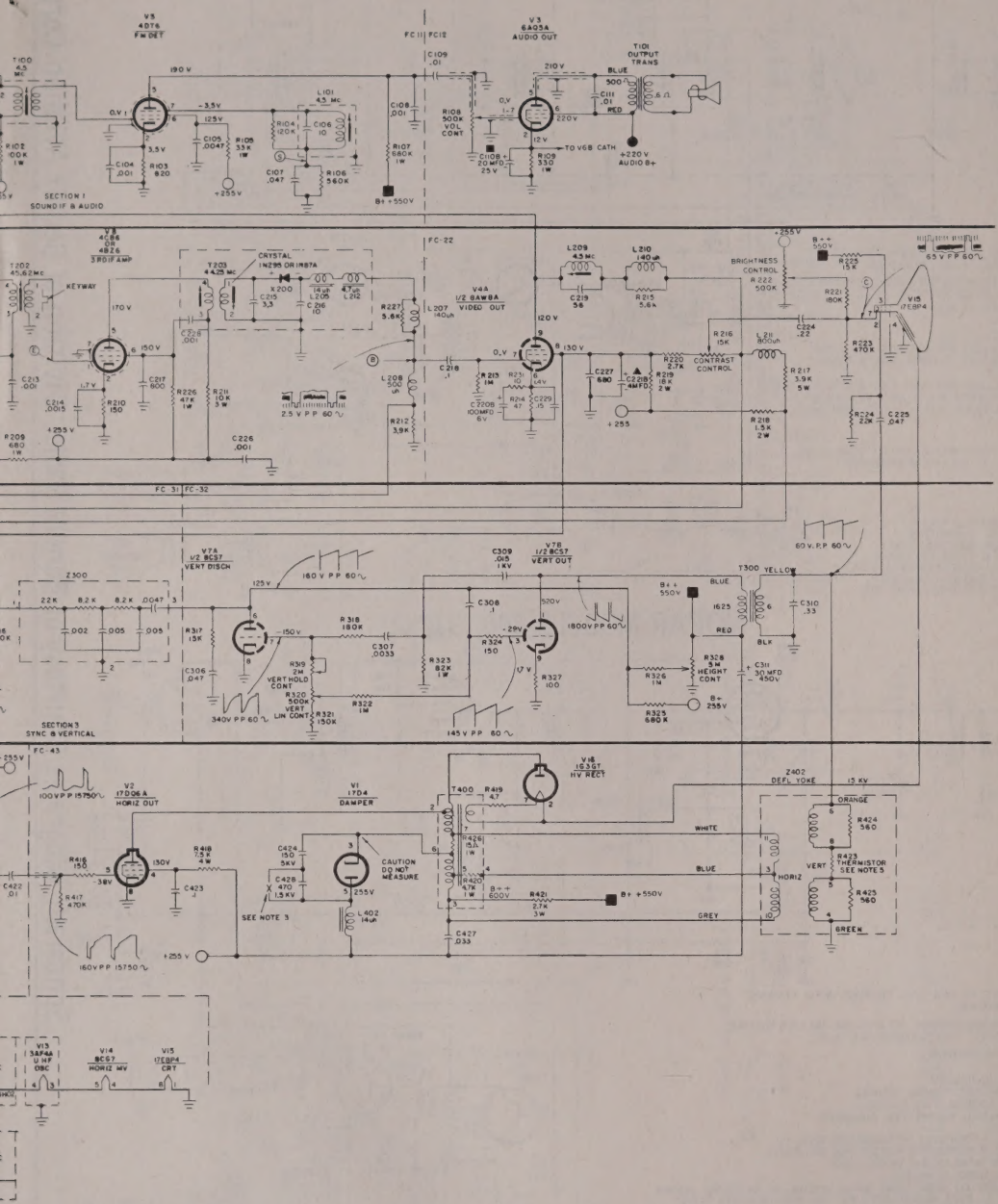
TERMINAL END VIEW OF L1, T2, T3, T4, T5



RESISTANCE CHART									
L1		T2		T3		T4		T5	
BETWEEN	RES. Ω	BETWEEN	RES. Ω	BETWEEN	RES. Ω	BETWEEN	RES. Ω	BETWEEN	RES. Ω
1&2	.5	1&2	15	1&2	15	1&2	11	1&2	400
1&5	6.5	1&5	6	1&5	6	1&5	4	3&4	250
2&5	6.5	2&5	9	2&5	9	2&5	7	3&5	150
3&4	1	3&4	1	3&4	1	3&4	1.5	4&5	100

SYLVANIA MODELS 6P08, 6P09 (CH. 661-1, -2)

Schematic Diagram Courtesy of Sylvania Electric Products Inc.



, -14, -15)

Schematic Diagram Courtesy of Westinghouse Electric Corporation